Combined Author Index

Aaronson, H.I. 2047-2060A
1547-1557A
Abiko, K. 1109-1115A
Adams, B.L. *255-264A*
Ågren, J. 1395-1401A
Ahmad, M. 681-689A
Ahmad, W. 635-640B
Ahmadzai, H. 149-161B
Akila, R. 163-168B
Akser, M. 625-633B
Alden, T.H. *51-62A*
811-826A
Alexandratos, S.D. 625-633B
Altstetter, C.J. 43-50A
123-134A
Amouzouvi, K.F. 1687-1694A
Ananthanarayanan, V. *339-346B*
Angers, L. 555-562A
Angers, R. 1151-1153A
Ankem, S. 2015-2025A
Antolin, S. *415-420B*
Antolovich, S.D. 85-95A
1431-1449A
Araki, H. 1536-1538A
Asai, S. *331-337B*
Ashburn, J.R. 1511-1517A
Awakura, Y. 489-496B
19-23B
31-39B
41-47B
49-57B
620B

Backer, G. *93-104B*
Bae, J.H. 399-407B
Baik, Y.-J. 151-153A
Baker, H.H. 223-231A
Baker, I. *1995-1996A*
Bale, C.W. 354A
Bamberger, M. 27-33A
Banerjee, D. *2015-2025A*
Barcik, J. 1171-1177A
Barin, I. 347-354B
Barral, M. 1229-1238A
Barron, P. *577-582B*
Bastin, G.F. 801-809A
Bement, A.L., Jr. 363-374A
5-17B
Benn, R.C. 747-752A
Bennett, B.W. 1117-1124A
Bennon, W.D. 611-616B
Berger, M. *429-435A*
Bernstein, H.L. 975-986A
Bernstein, I.M. 1011-1022A
1023-1028A
Beswick, J.M. 1897-1906A
Bhargava, V. 827-833A
Bird, J.E. 563-579A
1154-1156A
Birks, N. 1785-1803A
Blander, M. 1779-1783A
591-598B
Bloom, I. *1779-1783A*
Boettinger, W.J. 487-490A
Bogdanoff, J.L. 1855-1859A
Bose, D.K. *445-449B*
Bouffard, J.P. 162-164A
Boyer, R.R. 2095-2103A
Bradley, F. 355-363B
365-370B
371-380B
Brenner, S.S. 519-523A
Briant, C.L. *691-699A*
Briggs, D. 162-164A
Brimacombe, J.K. 659-671B
119-130B
131-147B
649-658B
Buck, O. 1415-1420A
857-863A
1593-1601A
Burdette, H.E. 487-490A
Burke, M.G. 519-523A
Buschow, K.H.J. *903-907A*
Butler, E.P. 463-472A
Byrne, J.G. 935-936A
1153-1154A
153-154A

Caligiuri, R.D. 1483-1493A
Cao, W.-D. 1569-1585A
Carlson, J.M. 563-579A
1154-1156A
Carlson, O.N. 1415-1420A
Castillejos, A.H. 659-671B
649-658B
Caveny, D. 1779-1783A

Chaklader, A.C.D. 355-363B
365-370B
371-380B
Chakravarty, J.P. *5-9A*
Challenger, K.D. 987-999A
Chan, K.S. 581-591A
593-602A
1843-1854A
Chang, G.-M. 1819-1820A
Chang, K.-M. 1819-1820A
Chang, Y.A. *237-244B*
733-745A
Chatterjee, D.K. 283-291A
Chattopadhyay, K. 1131-1136A
Chaudhury, P.K. *2105-2114A*
Chen, R.T. 1451-1468A
Chen, S.-H. 1861-1875A
Chen, W. *1389-1394A*
1531-1532A
Chen, Y. 1389-1394A
1531-1532A
Cheong, D.-S. *857-863A*
Chin, B.A. 79-84A
Cho, E.H. 315-323B
Chochol, M. 478B
Chokshi, A.H. *63-67A*
Choo, W.K. 759-766A
Chou, K.-C. 323-326A
Christodoulou, L. *135-149A*
Chuang, Y.-Y. 733-745A
Chung, J. 957-968A
Chung, Y.R. 1179-1190A
Claveau, A. *471-477B*
Clegg, L.J. 1687-1694A
Clyne, T.W. 1519-1530A
Colinet, C. 903-907A
Collur, M.M. 733-740B
Condas, G.A. 156-161A
Conrad, H. 437-450A
Cook, D.C. *201-210A*
Cooley, R.F. 701-705A
Cornie, J.A. 1180-1183A
Cosandey, F. 1239-1248A
Costa, J.E. *1421-1430A*
Courtney, T.H. 1249-1256A
Crites, D.C. 255-264A
Crowther, D.N. *1929-1939A*
Cubicciotti, D. 1483-1493A
Curreri, P.A. 1511-1517A

Damkroger, B.K. 483-485A
Danyluk, S. 19-26A
David, S.A. *1996-1999A*
1195-1201A
Davidson, D.L. 2115-2128A
Deb, P. 987-999A
Debroy, T. 733-740B
597-601B
DeKock, C.W. 511-517B
Denholm, W.T. *393-397A*
Denis, S. 1203-1212A
Dewing, E.W. 409-414B
Dexter, S.C. 1125-1130A
Dhua, S.K. *1131-1136A*
Dobbyn, R.C. 487-490A
Doig, P. 399-406A
Dokiya, M. *433-444B*
Donahue, F.M., III 681-685B
Donelson, R. 969-974A
Dorward, R.C. 1820-1823A
Doss, S.K. *158-161A*
Doucet, A.B. 2129-2134A
Doyle, F.M. 743-746B
Drew, R.A.L. *941-947A*
Dubé, D. 1151-1153A
Dubensky, E.M. 1887-1895A
Duncan, D.R. 79-84A
Dwarakadasa, E.S. *865-876A*

Edwards, G.R. *483-485A*
Ehlers, S.K. 509-518A
283-291A
Eiselstein, L.E. *1483-1493A*
Ekimoto, T. 377-383A
El-Kaddah, N. 529-538B
539-548B
Elango, B.V. *25-30B*
Eliezer, D. 1533-1536A
Elkind, B.J. 473-480A
Elliott, J.F. *478B*
Elmore, M.R. 483-488B
England, R.O. 303-312A
Enoki, H. 949-955A
Enomoto, M. *1547-1557A*
Epperson, J.E. 2027-2035A
Era, H. 957-968A
Esdaile, J.D. 393-397A
169-180B

Evans, A.G. 641-651A
Evans, J.W. 257-278B
Evans, L.G. 71-79B
Exner, H.E. *1299-1308A*

Faber, J., Jr. *2027-2035A*
Fang, L. 181-187B
Field, D.J. 483-472A
Fine, M.E. *555-562A*
Fink, J.L. *1539-1542A*
Flemings, M.C. 915-924A
925-932A
Flewitt, P.E.J. *399-406A*
Foulkes, F.R. 741-748B
Froes, F.H. 1533-1536A
Frommeyer, G. 1703-1711A
Frost, H.J. *1995-1996A*
Fruehan, R.J. 673-680B
687-693B
746-748B
381-390B
415-420B
577-582B
Fuerstenau, M.C. *483-488B*
25-30B
325-330B
Fujishige, M. 433-444B
Funkenbusch, P.D. *1249-1256A*
Furukawa, S. 621-628A
715-717A

Ganesan, S. 721-723A
421-424B
Gao, G.Y. 1125-1130A
Gao, M. 701-705A
Gao, Y. 1001-1009A
Garosshen, T.J. *69-77A*
Garrison, W.M., Jr. 1257-1263A
Génin, J.-M.R. 1371-1388A
Gerberich, W.W. 1861-1875A
German, R.M. *909-914A*
11-17A
Gerold, V. 2135-2141A
Ghosh, A.K. *653-661A*
2151-2156A
Gibson, E.D. 223-231A
Gilbert, E.R. 79-84A
Glasgow, T.K. *1663-1678A*
Glazer, J. 1695-1701A
Glicksman, M.E. 341-345A
Goel, N.C. 5-9A
Goto, K.S. *549-555B*
Grant, N.J. 1703-1711A
2037-2046A
Grieveson, P. *713-718B*
Grugel, R. 1137-1142A
Gruzleski, J.E. 941-947A
Gupta, C.K. 445-449B
Gupta, S.K. *713-718B*
Gustafson, P. 175-188A
Guzowski, M.M. 603-619A

Habiby, F. 350-353A
Hack, J.E. 581-591A
Hagiwara, M. *621-626A*
Hahn, G.T. 827-833A
Han, K.N. 635-640B
483-488B
25-30B
325-330B
Han, Q. 499-507A
543-553A
Hanada, S. 265-271A
Hansen, S.S. 481-483A
211-222A
Harmon, B.S. 1341-1351A
Hashmi, F.H. 350-353A
He, Y. 81-92B
Heckel, R.W. *2061-2073A*
2075-2086A
2087-2094A
Hehemann, R.F. *969-974A*
Hellawell, A. 1721-1733A
Hendricks, R.W. 2027-2035A
Henein, H. 59-69B
Herro, H.M. *249-254A*
Hertzman, S. 1745-1752A
1753-1766A
1767-1778A
Hinatsu, J.T. 741-748B
Hino, M. 189-194B
Hirato, T. 489-496B
31-39B
Hirono, S. 19-23B
49-57B
Hirth, J.P. 335-340A
1061-1072A

Hiskey, J.B. 641-647B
Hoagland, R.G. 1061-1072A
Hogan, L.M. 707-713A
Hon, M.-H. *617-619B*
Horton, J.A. 1265-1277A
Horton, J.A., Jr. 2157-2162A
Hsu, T.Y. *1389-1394A*
1531-1532A
Huang, S.C. 1819-1820A
Huffman, D. 511-517B
Huo, C. *499-507A*
543-553A
Hwang, K.S. 11-17A

Iino, M. 1559-1564A
Im, Y. 19-26A
Incropera, F.P. 611-616B
Indrawirawan, H. 1415-1420A
Inoue, A. 621-628A
715-717A
377-383A
Ioannidis, E.K. 407-416A
Irons, G.A. 105-117B
Ishida, K. *949-955A*
Izumi, O. 265-271A

Jacob, K.T. 163-168B
Jain, P.C. 703-711B
Janowski, G.M. 1341-1351A
Jarl, M. 1745-1752A
Jarrett, N. 289-313B
Jata, K.V. 1291-1298A
Jeong, W.C. *933-934A*
629-635A
Johnson, D.L. 717-721A
Johnson, W.C. 1093-1097A
1213-1228A
233-247A
Jönsson, B. 1395-1401A

Kandra, J. 1239-1248A
Kang, C.T. *1785-1803A*
Kang, S. 2037-2046A
Kang, S.-M. 1587-1592A
Kang, S.K. 747-752A
Kao, P.-W. *935-936A*
153-154A
Kashyap, B.P. 417-424A
Kassner, M.E. *835-846A*
Katada, H. 331-337B
Kattamis, T.Z. 1179-1190A
Kaufman, M.J. 1539-1542A
Kaukler, W.F. *1511-1517A*
Keiser, J.R. 1996-1999A
Kerr, R. 1011-1022A
Kestner, S.C. 637-639A
Khadkikar, P.S. 425-428A
1995-1996A
Khan, A.Q. 350-353A
Kikuchi, M. *156-158A*
Kim, C.H. 933-934A
629-635A
Kim, D. 451-457B
727-732B
Kim, D.G. 759-766A
Kim, N. 701-705A
Kim, S. *1907-1913A*
Kim, S.-H. 59-69B
873-880B
381-390B
Kimmerle, W.L. *1029-1033A*
Kimura, H. 1109-1115A
Kimura, H.M. 377-383A
Kivilahti, J.K. *1679-1681A*
Kleppa, O.J. 1989-1994A
Klueh, R.L. 1279-1290A
Knott, B.R. 767-775A
847-855A
Kobayashi, T. 1941-1949A
Kocks, U.F. 1083-1092A
Konishi, Y. *331-337B*
Koss, D.A. 637-639A
1887-1895A
Kozin, F. 1855-1859A
Kraft, R.W. *1359-1369A*
1403-1414A
Krauss, G. 717-721A
Krueger, D.D. *1431-1449A*
Kuhlman, G.W. 2095-2103A
Kum, D.W. 1703-1711A
Kumar, A. 703-711B
Kundrat, D.M. *478B*
478B
Kurz, W. 341-345A
1137-1142A
Kutumbarao, V.V. 877-891A

Kwon, H. 1587-1592A

Langan, T.J. 1735-1744A 303-312A
Latanision, R.M. 1653-1662A
Laxmanan, V. 167-170A
Lebrun, J.L. 1229-1238A
Lederich, R.J. 1333-1335A
Lee, C.-S. 1861-1875A
Lee, J.K. 1249-1258A
Lee, M.-C. 485-486A
Lee, S.-L. 1353-1357A
Lee, T.S.F. 1653-1662A
Lee, Y.Y. 1099-1107A
Legzdina, D. 1713-1719A
Lele, S. 1915-1922A
Lenel, F.V. 11-17A
Lenel, U.R. 767-775A 847-855A
Lerch, B.A. 2135-2141A
Leslie, W.C. 1629-1639A
Leverant, G.R. 581-591A 593-602A
Li, J. 753-758A
Liddell, K.C. 505-510B
Liebson, M. 303-312A
Lin, H.K. 497-503B
Lin, J.-C. 237-244B
Lin, J.S. 2027-2035A
Lin, M.-R. 1035-1042A
Lin, T. 641-651A
Lin, T.-H. 617-619B
Lindquist, P.G. 2163-2173A 2175-2180A
Lipsitt, H.A. 509-518A 283-291A
Lipton, J. 341-345A
Liu, C.T. 1265-1277A
Liu, G.J. 1923-1927A
Liu, X. 543-553A
Livne, T. 1861-1875A
Loomis, B.A. 2027-2035A
López, H.F. 1971-1977A
Lu, S.-Z. 1721-1733A
Lu, X.-P. 1569-1585A
Lynch, D.C. 181-187B

Maeder, G. 1229-1238A
Maehara, Y. 663-672A
Mahapatra, R.B. 425-432B
Mahoney, M.W. 653-661A
Majima, H. 741-748B 489-496B 19-23B 31-39B 41-47B 49-57B 620B
Majumdar, B.S. 1053-1059A
Malinsky, I. 471-477B
Mankhand, T.R. 719-725B
Maples, A.L. 1979-1987A
Marshall, G.J. 407-416A
Martinez, L. 1835-1842A
Mason, J.F. 1519-1530A
Masumoto, T. 621-628A 715-717A
Matsumiya, T. 723-727A
Mattlin, E.M. 1805-1812A
Mazumder, J. 313-322A
McAlister, A.J. 385-392A
McCarthy, G.P. 69-77A
McCarty, L.V. 969-974A
McCune, R.A. 2005-2014A
McMahon, M.E. 835-846A
McMasters, O.D. 223-231A
McMinn, A. 273-281A
McNallan, M.J. 1099-1107A
McNeish, D.J. 2015-2025A
Mehta, M.L. 703-711B
Mendiratta, M.G. 509-518A 283-291A
Merchant, H.D. 1179-1190A
Meschter, P.J. 1333-1335A 347-350A
Meyer, J.L. 529-538B 539-548B
Michael, J.R. 481-483A 211-222A
Miller, J.D. 625-633B
Miller, M.K. 519-523A
Miller, W.H., Jr. 1451-1468A
Milligan, W.W. 85-95A
Minamino, Y. 1536-1538A
Mino, K. 777-784A
Mintz, B. 1929-1939A
Mitchell, A. 355-363B 365-370B 371-380B
Mobley, C.E. 339-346B
Modigell, M. 347-354B
Mohamed, F.A. 2105-2114A
Mohamed, Z. 1929-1939A
Mohan, M.K. 719-725B

Moody, N.R. 1257-1263A 1469-1482A
Moore, J.J. 519-527B
Morita, Z. 195-202B
Morral, J.E. 1585-1568A
Morris, J.W., Jr. 1073-1081A 1695-1701A
Mortensen, A. 1180-1163A
Mueller, B.A. 1143-1150A
Mulazimoglu, M.H. 941-947A
Munitz, A. 565-575B
Murray, G.T. 162-164A
Murray, J.L. 385-392A

Nagamori, M. 471-477B
Nagata, K. 549-555B
Nair, C.G.K. 865-876A
Nair, K.U. 445-449B
Nair, S.V. 97-107A
Naito, T. 156-158A
Nakagawa, Y.G. 777-784A
Nardone, V.C. 1029-1033A 109-114A
Nasreldin, A.M. 1279-1290A
Nathal, M.V. 1961-1970A
Nebo, C.O. 635-640B 25-30B
Nesbitt, J.A. 2061-2073A 2075-2086A 2087-2094A 169-180B
Ng, K. 785-799A
Nishida, M. 949-955A
Nishizawa, T. 723-727A
Nittono, O. 893-902A
Nix, W.D. 478B
Notis, M.R.

Ochiai, S. 673-679A
Oden, L.L. 2005-2014A
Ohashi, T. 723-727A
Ohira, K. 549-555B
Ohmori, Y. 663-672A
Ohtomo, A. 777-784A
Okabayashi, K. 115-121A
Oliver, W.C. 1996-1999A
Olla, P. 293-301A
O'Malley, M.L. 505-510B
Oreper, G.M. 1325-1332A
Osamura, K. 673-679A
Owen, C.V. 1415-1420A 857-863A 1593-1601A
Ozturk, B. 746-748B 577-582B

Page, R.A. 1843-1854A 273-281A
Pak, J.J. 687-693B
Pal, U.B. 583-589B
Palmer, B.R. 483-488B
Park, J.-W. 43-50A
Park, S.K. 41-47B
Parthasarathy, T.A. 1713-1719A 1309-1312A
Pasturel, A. 903-907A
Patil, B.V. 583-589B
Paul, A. 733-740B
Pehlke, R.D. 681-685B
Pelton, A.D. 354A
Peng, M. 499-507A
Perepezko, J.H. 1143-1150A
Pereyra, R.A. 35-42A
Perng, T.P. 123-134A
Perra, M.W. 1469-1482A
Peters, E. 41-47B
Peterson, D.T. 249-254A
Petrovic, J.J. 1829-1834A
Pettit, F.S. 1785-1803A
Phillips, D.S. 1907-1913A
Phule, P.P. 641-647B
Piccone, T.J. 915-924A 925-932A
Pickens, J.R. 135-149A 1735-1744A 1603-1611A 303-312A
Pickering, H.W. 1117-1124A
Pippan, R. 429-435A
Pietka, B.J. 1341-1351A
Poirier, D.R. 1979-1987A 245-256B 721-723A 421-424B 1156-1160A
Porter, W.D. 2157-2162A
Pouillon, D. 743-746B
Prasad, P.M. 719-725B
Precht, W. 1603-1611A
Pritzker, M.D. 641-647B

Quillen, D.R. 625-633B

Raghavan, K.S. 2143-2150A
Raghavan, R.K. 255-264A
Rajakumar, V. 713-718B
Rajan, V.B. 335-340A 1313-1323A
Raju, S. 1131-1136A
Rama Rao, K.V. 354-357A
Ramage, R.M. 1291-1298A
Rao, H.C.V. 865-876A
Rao, Y.K. 327-333A 459-470B
Rapp, R.A. 339-346B
Rath, B.B. 483-485A
Rau, M.-F. 257-276B
Ravichandran, K.S. 865-876A
Rawers, J.C. 1805-1812A
Reddy, A.V. 1043-1052A
Reddy, R.G. 591-596B
Rhodes, C.G. 2151-2156A
Ricou, R. 529-538B 539-548B
Rieck, D. 257-278B
Ritchie, R.O. 641-651A 1613-1629A
Roine, A. 203-212B 213-223B
Rosen, M. 473-480A
Rosenfield, A.R. 1053-1059A 1061-1072A
Rosenqvist, T. 471-477B
Rubcumintara, T. 325-330B
Rubin, C.A. 827-833A

Saboungi, M.-L. 1779-1783A
Sahai, Y. 339-343B 81-92B
Sahoo, P. 597-601B
Samarasekera, I.V. 119-130B 131-147B
Santella, M.L. 1265-1277A
Sargent, G.A. 437-450A
Sarma, D.S. 877-891A
Sastry, S.M.L. 1333-1335A
Sathiyamoorthy, D. 445-449B
Sato, K. 19-23B 49-57B
Sauert, F. 347-354B
Savage, S.J. 1533-1536A
Sawtell, R.R. 1695-1701A
Scamans, G.M. 463-472A
Schaefer, R.J. 385-392A
Schmidt, C.G. 1483-1493A
Schneibel, J.H. 2157-2162A 1835-1842A
Schroth, J.G. 1061-1072A
Schulson, E.M. 1995-1996A
Schwerdtfeger, K. 603-609B
Seagle, S.R. 2015-2025A
Sekhar, J.A. 354-357A
Sentner, D.A. 603-619A
Shabel, B.S. 425-428A
Shah Khan, M.Z. 1951-1960A
Shahapurkar, D.S. 225-230B 231-235B
Shang, J.K. 1613-1629A
Sharma, R.C. 237-244B 1641-1644A
Shenoy, R.N. 1503-1510A
Sheppard, T. 407-416A
Sherby, O.D. 451-462A 1703-1711A
Shewmon, P.G. 1309-1312A
Shiflet, G.J. 1291-1298A
Shimizu, M. 957-968A
Shin, Y.W. 437-450A
Shiohara, Y. 915-924A 925-932A
Shockey, D.A. 1941-1949A
Shukla, A.K. 163-168B
Sick, G. 603-609B
Sigl, L.S. 1299-1308A
Sigworth, G.K. 603-619A
Simkovich, G. 485-486A
Simon, A. 1203-1212A
Singh, J. 313-322A
Singh, S. 1915-1922A
Siviour, N.G. 393-397A 169-180B
Sjöström, S. 1203-1212A
Skjerpe, P. 189-200A
Skolianos, S. 1179-1190A
Small, W.M. 225-230B 231-235B
Smialek, J.L. 164-167A
Smith, K.A. 519-527B
Sohn, H.Y. 451-457B 497-503B 727-732B
Solana, F. 1011-1022A 1023-1028A
Soleiman, M.K. 459-470B
Song, H. 707-713A
Speer, J.G. 481-483A 211-222A
Speiser, R. 421-424B 1156-1160A

Spitzig, W.A. 1593-1601A
Sprauel, J.M. 1229-1238A
Spurling, R.A. 2151-2156A
Sridhar, G. 877-891A
Staffansson, L.-I. 149-161B
Starke, E.A., Jr. 1291-1298A 1451-1468A
Stoltz, R.E. 1489-1482A
Strife, J.R. 109-114A
Strum, M. 1073-1081A
Stupel, M.M. 27-33A
Stüwe, H.P. 429-435A
Subramanyam, D.K. 1629-1639A
Sun, W.-P. 617-619B
Sundararajan, G. 1043-1052A
Sundaresan, M. 445-449B
Suryanarayana, C. 1915-1922A
Sussman, R.C. 71-79B
Suzuki, S. 1109-1115A
Szekely, J. 93-104B 529-538B 539-548B 1325-1332A

Takamadate, C. 1023-1028A
Tanaka, T. 195-202B
Tang, K.P. 717-721A
Tangri, K. 5-9A 417-424A
Tanii, S. 1109-1115A
Tarasova, O.B. 1679-1681A
Tarby, S.K. 478B 354A
Taub, A.I. 1819-1820A
Tavlarides, L.L. 399-407B
Taylor, M.P. 391-398B
Tewari, S.N. 525-542A 1164-1165A 167-170A 1663-1678A
Therrien, A.E. 987-999A
Thomas, B.G. 119-130B 131-147B
Thompson, A.W. 1421-1430A 1877-1886A 1011-1022A 1023-1028A
Thompson, K.R.L. 1951-1960A
Thompson, M.S. 1565-1568A
Tian, Y.L. 1359-1369A 1403-1414A
Tien, J.K. 1029-1033A 97-107A
Tillman, T.D. 69-77A
Tiwari, B.L. 1645-1651A
Toguri, J.M. 695-702B 189-194B
Tomita, Y. 115-121A 1495-1501A
Tomota, Y. 1073-1081A
Topor, L. 1989-1994A
Tran, A. 701-705A
Tsubakino, H. 2047-2060A
Tuset, J.Kr. 471-477B
Tzou, J.-L. 1613-1629A

Udupa, A.R. 519-527B
Ueda, H. 156-158A
Ujiie, S. 433-444B
Ul Haq, A. 350-353A
Unnam, J. 1503-1510A
Utigard, T. 695-702B

van Loo, F.J.J. 801-809A
Van Stone, R.H. 1431-1449A
Vander Sande, J.B. 1813-1817A
Vanderwalker, D.M. 1191-1194A
Vedula, K. 425-428A 1995-1996A
Verhoeven, J.D. 223-231A
Verzasconi, S.L. 1695-1701A
Virdis, P.F. 293-301A
Viswanadham, R.K. 2163-2173A 2175-2180A
Vitek, J.M. 154-156A 1996-1999A 1195-1201A
Vivès, C. 529-538B 539-548B
Voorhees, P.W. 1213-1228A 487-490A
Vrolijk, J.W.G.A. 801-809A

Wadley, H.N.G. 473-480A
Wadsworth, J. 451-462A
Wagoner, R.H. 2129-2134A 1001-1009A 1035-1042A 2143-2150A
Wan, R.Y. 625-633B
Wang, J.-J. 323-326A

Wang, W.-X. 1813-1817A
Warren, G.W. 59-69B
Was, G.S. 1313-1323A
Wayman, C.M. 785-799A
Webster, D. 2181-2193A
Weertman, J.R. 555-562A
Wei, W. 273-281A
Weinberg, F. 425-432B
Weiss, B.Z. 27-33A
Welch, B.J. 391-398B
Wenk, H.R. 1083-1092A
Wiedemann, K.E. 1503-1510A
Williams, J.C. 2015-2025A
1421-1430A
Willis, J.O. 35-42A
Wilson, B.W. 393-397A
Wing, S.S. 1483-1493A
Wonchala, E.P. 279-280B
Wu, J.K. 717-721A
Wu, M.K. 1511-1517A
Wu, M.Y. 451-462A
Wu, S.-T. 1353-1357A
Wu, Y. 915-924A
925-932A
Wynnyckyj, J.R. 279-280B

Xu, Y.B. 1923-1927A

Yamada, H. 549-555B
Yamada, W. 723-727A
Yamane, T. 1536-1538A
Yanai, T. 195-202B
Yaney, D.L. 893-902A
Yang, C.Y. 701-705A
Yeum, K. 1979-1987A
Yokokawa, H. 433-444B
Yoon, D.N. 151-153A
Yu, H. 557-563B
Yurek, G.J. 1813-1817A

Zhang, T.Y. 1923-1927A
Zhong, W. 499-507A
543-553A
Zuidema, B.K. 1629-1639A
Zukas, E.G. 35-42A

Combined Subject Index

Abatement (pollution)
See Pollution abatement

Abrasive wear
See Impingement erosion

Absolute viscosity
See Viscosity

Acid leaching
See also Sulfuric acid leaching
Leaching Studies of Chalcopyrite and Sphalerite With Hypochlorous Acid. 315-323B

Acids (inorganic)
See Inorganic acids

Actinide metals
See Uranium

Activation energy
Analysis of the Creep Behavior of Silicon Carbide Whisker Reinforced 2124 Aluminum (T4). 109-114A

Activity (chemical)
Antimony Activities in Copper Mattes. 189-194B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Effect of Oxygen, Nickel, and Cobalt. 203-212B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Impurity Elimination. 213-223B
Calculating Activities From the Phase Diagram Involving an Intermediate Compound Using Its Entropy of Formation. 323-326A
Activities in the System LiF—NaF—AlF_3. 409-414B
Electrical Conduction Behavior of Cementite, Fe_3C. 485-486A
Activity of Silica in Calcium-Aluminate Based Slags. 746-748B
Analytical Expressions for the Activity of the Solute in Binary Dilute Solutions in Terms of Associated Solution Model Parameters. 1641-1644A
Thermodynamic Properties of Liquid Al—Mg Alloys Measured by the EMF Method. 1645-1651A

Activity coefficients
See Activity (chemical)

Additives
See Master alloys

Age hardening
See Precipitation hardening

Age hardening steels
See Precipitation hardening steels

Agents
See Oxidizing agents

Agglomerating
See Agglomeration

Agglomeration
See also Sintering (roasting)
Capillary Forces Between Spheres During Agglomeration and Liquid Phase Sintering. 11-17A

Aggregation
See Agglomeration

Aging
G-Phase Formation in Aged Type 308 Stainless Steel. 154-156A

Agitation
See Electromagnetic stirring

Air pollution
Desulfurization of CO:SO_2 Contaminated Gases by Manganous Oxide. 149-161B

Aircomatic welding
See Gas metal arc welding

Alfven waves
See Magnetohydrodynamics

Alkali metals
See Lithium
Potassium
Sodium

Alkaline earth metal alloys
See Barium base alloys
Magnesium base alloys
Strontium

Alkaline earth metal compounds
See Magnesium compounds

Alkaline earth metals
See Magnesium
Strontium

Alkaline leaching
See Ammonia pressure leaching

Allotropic transformation, Pressure effects
The γ to α Phase Transformation in Cerium. 35-42A

Alloy powders, Synthesis
Attempted Preparation of Ti-6-4 Alloy Powders From $TiCl_4$, Aluminum, VCl_4, and Sodium. 511-517B

Alloy steels
See also Austenitic stainless steels
Carbon manganese steels
Chromium molybdenum steels
Chromium steels
Corrosion resistant steels
Duplex stainless steels
Ferritic stainless steels
High strength low alloy steels
High strength steels
Low alloy steels
Manganese steels
Maraging steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel steels
Precipitation hardening steels
Silicon steels
Stainless steels

Alloy steels, Mechanical properties
Modeling of Local Strains in Ductile Fracture. 1877-1886A

Alloying
See Mechanical alloying

Alloys
See Alloy steels
Corrosion resistant alloys
Dispersion hardening alloys
Ferrous alloys
Master alloys
Precipitation hardening alloys
Superalloys

Alpha annealing
See Annealing

Alphatizing
See Annealing

Alumina
See Aluminum oxide

Aluminum, Alloying additive
Preparation, Mechanical Strengths, and Thermal Stability of Ni—Si—B and Ni—P—B Amorphous Wires. 621-628A
The Effect of Aluminum on the Work Hardening and Wear Resistance of Hadfield Manganese Steel. 1629-1639A

Aluminum, Alloying elements
Tensile Flow and Fracture Behavior of DO_3 and Fe—25 at.% Al and Fe—31 at.% Al Alloys. 283-291A
Oxidation of Fe—7Cr—12Ni—(0-6)Al—(0-7)Si Alloys. 1805-1812A

Aluminum, Binary systems
Stable and Metastable Phase Equilibria in the Al—Mn System. 385-392A
Thermodynamic Properties of Liquid Al—Mg Alloys Measured by the EMF Method. 1645-1651A

Aluminum, Casting
Electromagnetic and Fluid Flow Phenomena in a Mercury Model System of the Electromagnetic Casting of Aluminum. 539-548B
A Fluid Mechanics Model of the Planar Flow Melt Spinning Process Under Low Reynolds Number Conditions. 557-563B

Aluminum, Diffusion
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. I. Diffusion Paths and Microstructures. 2061-2073A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. II. Diffusion Coefficients and Predicted Concentration Profiles. 2075-2086A
Predicting Diffusion Paths and Interface Motion in $\gamma/\gamma + \beta$, Ni—Cr—Al Diffusion Couples. 2087-2094A

Aluminum, Extraction
United States Extractive Metallurgy—the 1980s and Beyond. 289-313B
Melt/Freeze Heat Transfer Measurements in Cryolite-Based Electrolytes. 391-398B
Activities in the System LiF—NaF—AlF_3. 409-414B
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) Liquid Alloys. 433-444B
Phase Equilibria in the Al—Si—C System. 2005-2014A

Aluminum, Heat treatment
Pulsed Laser Control of Surface Solidification. 354-357A

Aluminum, Melting
The Role of Boron in the Grain Refinement of Aluminum With Titanium. 603-619A

Aluminum, Microstructure
The Dislocation Microstructure of Aluminum Deformed to Very Large Steady-State Creep Strains. 835-846A

Aluminum, Powder technology
Hot Extrusion of Aluminum Powder at Low Reduction Ratios: Analytical and Metallographic Studies. 703-711B
The Undercooling of Aluminum. 1143-1150A

Aluminum, Ternary systems
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A
Phase Equilibria in the Al—Si—C System. 2005-2014A

Aluminum, Welding
A Comprehensive Representation of Transient Weldpool Development in Spot Welding Operations. 1325-1332A

Aluminum base alloys, Composite materials
Analysis of the Creep Behavior of Silicon Carbide Whisker Reinforced 2124 Aluminum (T4). 109-114A
A Study of the Hot-Working Behavior of SiC—Al Alloy Composites and Their Matrix Alloys by Hot Torsion Testing. 303-312A
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A
On the Infiltration of Metal Matrix Composites. 1160-1163A
The Squeeze Infiltration Process for Fabrication of Metal-Matrix Composites. 1519-1530A
Fracture Characteristics of Al—4% Mg Mechanically Alloyed With SiC. 2115-2128A

Aluminum base alloys, Corrosion
The Stress-Corrosion Cracking Behavior of High-Strength Aluminum Powder Metallurgy Alloys. 135-149A
Atmospheric Corrosion of Magnetic-Film Structures. 158-161A
The Effect of Solution Heat-Treatment on Grain Boundary Segregation and Stress-Corrosion Cracking of Al—Zn—Mg Alloys. 1735-1744A

Aluminum base alloys, Crystal growth
A Study of the Coarsening of Liquid—Solid Mixtures Using Synchrotron Radiation Microradiography. 487-490A
Interparticle Spacings and Undercoolings in Al—Si Eutectic Microstructures. 707-713A
The Mechanism of Silicon Modification in Aluminum—Silicon Alloys: Impurity Induced Twinning. 1721-1733A

Aluminum base alloys, Diffusion
Interdiffusion in a Dilute Solid Solution of Al—Li Alloy Measured by Electrical Resistance. 1536-1538A

Aluminum base alloys, Directional solidification
Growth of Interdendritic Eutectic in Directionally Solidified Al—Si Alloys. 1137-1142A
A Thermodynamic Prediction for Microporosity Formation in Aluminum-Rich Al—Cu Alloys. 1979-1987A

Aluminum base alloys, Electrical properties
The Effect of Strontium on the Electrical Resistivity and Conductivity of Aluminum—Silicon Alloys. 941-947A
Electrical Properties of Al—In—Sn Alloys Directionally Solidified in High and Low Gravitational Fields. 1511-1517A

Aluminum base alloys, Mechanical properties
High Temperature Deformation of a Commercial Aluminum Alloy. 293-301A
On the Contribution of Concurrent Grain Growth to Strain Sensitive Flow of a Superplastic Al—Cu Eutectic Alloy. 417-424A
Effects of Microstructure on the Erosion of Al—Si Alloys by Solid Particles. 437-450A
Geometric Models of Internal Shape Change as Shear Bands Form During Plane Strain Extension. 563-579A
Superplasticity in a High Strength Powder Aluminum Alloy With and Without SiC Reinforcement. 653-661A
Elevated Temperature Deformation Behavior of an Al—8.4Fe—3.6Ce Alloy. 893-902A
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A
Mechanical Behavior of Aluminum—Lithium Alloys at Cryogenic Temperatures. 1695-1701A
Deformation Mechanisms of a Rapidly Solidified Al—8.8Fe—3.7Ce Alloy. 1713-1719A
Void/Pore Distributions and Ductile Fracture. 1887-1895A
Creep and Ductility in an Al—Cu Solid-Solution Alloy. 2105-2114A
The Effect of Low Melting Point Impurities on the Properties of Aluminum—Lithium Alloys. 2181-2193A

Aluminum base alloys, Metal working
Thermal and Strain Rate Softening in Al—Mg Sheet During Necking and Shear Band Formation. 1154-1156A
Superplastic Forming of Rapid Solidification Processed Al—4Li—0.2Zr. 1333-1335A

Aluminum base alloys, Microstructure
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Aluminum base alloys, Oxidation
The High Temperature Oxidation of Al—4.2Mg Alloy. 463-472A
Thermal Oxidation Behavior of an Al—Li—Cu—Mg—Zr Alloy. 681-689A

Aluminum base alloys, Phases (state of matter)
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A
Stable and Metastable Phase Equilibria in the Al—Mn System. 385-392A
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A
Identification of Dispersoids in Al—Mg Alloys Containing Manganese. 1353-1357A
Microstructural Observations and Thermal Stability of a Rapidly Solidified Aluminum—Gadolinium Alloy. 1533-1536A
Microstructural Characterization of Rapidly Solidified Al—Ta Alloys. 1915-1922A

Aluminum base alloys, Physical properties
Viscosities of Aluminum-Rich Al—Cu Liquid Alloys. 421-424B
Densities of Aluminum-Rich Aluminum—Copper Alloys During Solidification. 721-723A
Surface Tension of Aluminum-Rich Al—Cu Liquid Alloys. 1156-1160A
Thermodynamic Properties of Liquid Al—Mg Alloys Measured by the EMF Method. 1645-1651A

Aluminum base alloys, Powder technology
Microstructural Characterization of a Rapidly Solidified Al—Mg—Mn Powder Alloy. 407-416A
Rapidly Solidified P/M X2020 Aluminum Alloys. 2037-2046A

Aluminum base alloys, Rolling
A Study of the Hot Working Behavior of Al—Mg Alloy 5052 by Hot Torsion Testing. 1603-1611A

Aluminum base alloys, Structural hardening
Some Remarks on the Hardness and Yield Strength of Aluminum Alloy 7075 as a Function of Retrogression Time. 350-353A
Effect of Plastic Deformation on the Coarsening of Dispersoids in a Rapidly Solidified Al—Fe—Ce Alloy. 555-562A
Coarsening of Dispersed Intermetallic Phases in Al—4.5Cu—2Mn Alloy. 1179-1190A

Aluminum base alloys, Thermal properties
Modeling of Fixed Bed Heat Storage Units Utilizing Phase Change Materials. 339-346B

Aluminum compounds
See also Aluminum oxide

Aluminum compounds, Crystal lattices
DO_3-B2-α Phase Relations in Fe—Al—Ti Alloys. 509-518A

Aluminum compounds, Mechanical properties
The Role of Boron in Ductilizing Ni_3Al. 425-428A
Microstructures and Mechanical Properties of Ni_3Al Alloyed With Iron Additions. 1265-1277A
Cryogenic Properties of a P/M Ni_3Al—B Alloy. 1819-1820A
Discussion of "The Role of Boron in Ductilizing Ni_3Al". 1995-1996A
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Aluminum killed steels, Casting
Mathematical Model of the Thermal Processing of Steel Ingots. I. Heat Flow Model. 119-130B
Mathematical Model of the Thermal Processing of Steel Ingots. II. Stress Model. 131-147B

Aluminum killed steels, Crystal lattices
Effect of Manganese on the Recrystallization Texture of Phosphorus-Containing Low-Carbon Steel Sheet. 957-968A

Aluminum killed steels, Steel making
Activity of Silica in Calcium-Aluminate Based Slags. 746-748B

Aluminum oxide, Composite materials
The Effect of Processing Parameters on the Tensile Properties of Alumina Fiber Reinforced Magnesium. 273-281A
On the Infiltration of Metal Matrix Composites. 1160-1163A
The Squeeze Infiltration Process for Fabrication of Metal-Matrix Composites. 1519-1530A

Aluminum oxide, Reactions (chemical)
Photolytic Effects in Alumina Chlorination. 459-470B

Ammonia pressure leaching
The Leaching Kinetics of Cobalt and Nickel From Aluminum-Coprecipitated Products. 635-640B

Amorphous materials
See Metallic glasses

Amorphous structure
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sb Alloys. 1395-1401A

Analyzing
See Mathematical analysis
Microanalysis
Statistical analysis
Stress analysis

Annealing
See also Defect annealing
Spheroidizing
Fracture Behavior of Intercritically Treated Complex Structure in Medium-Carbon 6Ni Steel. 1587-1592A

Antimony, Binary systems
Calculating Activities From the Phase Diagram Involving an Intermediate Compound Using Its Entropy of Formation. 323-326A
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sb Alloys. 1395-1401A

Antimony, Reactions (chemical)
Antimony Activities in Copper Mattes. 189-194B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Effect of Oxygen, Nickel, and Cobalt. 203-212B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Impurity Elimination. 213-223B

Arc plasma heating
See Plasma arc melting

Arc plasma welding
See Plasma arc welding

Arc welding
See Gas metal arc welding
Plasma arc welding
Submerged arc welding

Arc welds
See Welded joints

Arrhenius activation energy
See Activation energy

Arsenic, Reactions (chemical)
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Effect of Oxygen, Nickel, and Cobalt. 203-212B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Impurity Elimination. 213-223B

Astroceram
See Ceramics

Atmospheric corrosion
Atmospheric Corrosion of Magnetic-Film Structures. 158-161A

Atmospheric pollution
See Air pollution

Atomic diffusion
See Diffusion

Attenuation
See Ultrasonic attenuation

Austempering
Improved Lower Temperature Fracture Toughness of Ultrahigh Strength 4340 Steel Through Modified Heat Treatment. 1495-1501A

Austenite
See also Retained austenite
The Influence of Starting Microstructure on the Retention and Mechanical Stability of Austenite in an Intercritically Annealed—Low Alloy Dual-Phase Steel. 5-9A

Austenite, Crystal growth
Austenite Recrystallization in Nb/V Microalloyed Steels. 481-483A

Austenitic stainless steels, Chemical analysis
Microdistribution of Cerium in Steel. 499-507A

Austenitic stainless steels, Corrosion
Effect of Grain Boundary Structure on Sensitization and Corrosion of Stainless Steel. 1117-1124A
Low Temperature Sensitization of Type 304 Stainless Steel Pipe Weld Heat Affected Zone. 1483-1493A

Austenitic stainless steels, Diffusion
Grain Boundary Segregation of Phosphorus and Sulfur in Types 304L and 316L Stainless Steel and Its Effect on Intergranular Corrosion in the Huey Test. 691-699A

Austenitic stainless steels, Irradiation
Effect of Irradiation on Failure Mode During Creep. 79-84A

Austenitic stainless steels, Mechanical properties
Theory of Mobile Dislocation Density: Application to the Deformation of 304 Stainless Steel. 51-62A
Comparison of Hydrogen Gas Embrittlement of Austenitic and Ferritic Stainless Steels. 123-134A
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A
An Experimental Investigation of Deformation-Induced Heating During Tensile Testing. 1035-1042A
The Effect of Microstructure on the Mode of Monotonic Fracture, Fatigue Crack Initiation, and Stage I Crack Growth in an Fe—21% Cr—11% Ni Heat Resisting Steel. 1951-1960A

Austenitic stainless steels, Metallography
Nonequilibrium Solute Segregation to Austenite Grain Boundaries in Low Alloy Ferritic and Austenitic Steels. 399-406A

Austenitic stainless steels, Microstructure
A Surface Segregation Study in Phosphorus- and Sulfur-Doped Type 304 Stainless Steels. 19-26A
Microstructure—Composition Relationships and M_s Temperatures in Fe—Cr—Mn—N Alloys. 767-775A

Austenitic stainless steels, Phase transformations
Strain Induced Martensite Formation in Stainless Steel. 201-210A
The Process of σ-Phase Solution in 25Cr—20Ni Austenitic Steels. 1171-1177A

Austenitic stainless steels, Phases (state of matter)
G-Phase Formation in Aged Type 308 Stainless Steel. 154-158A
A Thermodynamic Analysis and Calculation of the Fe—Ni—Cr Phase Diagram. 733-745A

Austenitic stainless steels, Structural hardening
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A
The Aging Behavior of Homogenized Type 308 and 308CRE Stainless Steel. 1195-1201A

Austenitic stainless steels, Welding
Mechanism of Alloying Element Vaporization During Laser Welding. 733-740B
Use of a Mechanical Properties Microprobe in the Study of Weld Transformations. 1996-1999A

Austenitizing
Interpretation of the Effects of High Austenitizing Temperature on Toughness Behavior in a Low Alloy, High Strength Steel. 1569-1585A

Auto oxidation
See Oxidation

Autodiffusion
See Diffusion

Balling
See Agglomeration

Barium base alloys, Oxidation
Synthesis of a Superconducting Oxide by Oxidation of a Metallic Precursor. 1813-1817A

Base exchange
See Cation exchanging

Bearing steels, Alloy development
The Effect of Chromium in High Carbon Bearing Steels. 1897-1906A

Bearing steels, Mechanical properties
Effect of Isothermal Martensite on Properties of an AISI 52100 Ball Bearing Steel. 1531-1532A

Bearing steels, Phase transformations
Isothermal Martensite Formation in an AISI 52100 Ball Bearing Steel. 1389-1394A

Bendability
See Formability

Binary systems, Diffusion
A Practical Solution for the Diffusion Equations in Binary and Multicomponent Systems With Constant Intrinsic Diffusion Coefficients. 801-809A

Binary systems, Microstructure
Cellular—Dendritic Transition in Directionally Solidified Binary Alloys. 167-170A

Binary systems, Phase transformations
Phase Transformations in the Zirconium-Rich Part of the Zr—Fe System Resulting From Heat Treatment and Plastic Deformation. 27-33A

Binary systems, Phases (state of matter)
A Thermodynamic Evaluation of the C—Fe—W System. 175-188A
A Thermodynamic Analysis of the Pb—S System and Calculation of the Pb—S Phase Diagram. 237-244B
Stable and Metastable Phase Equilibria in the Al—Mn System. 385-392A
Correction to "Effect of Small Additions of Silver on the Eutectic Temperature in the Lead-Tin System". 478B
Study of the Enthalpies of Formation in the Gd—(Fe, Co, Pd, Pt) Systems. 903-907A
Miscibility Gap Due to Ordering in the bcc Fe—Ge System. 949-955A
The Liquid Immiscibility and Associated Monotectic Reaction in Zn—In System. 1131-1136A
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sb Alloys. 1395-1401A
The Determination of the Titanium-Rich Liquidus and Solidus of the Ti—Fe System. 1679-1681A

Binary systems, Thermal properties
Calculating Activities From the Phase Diagram Involving an Intermediate Compound Using Its Entropy of Formation. 323-326A
Discussion of "Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions" and Author's Reply. 354A

Bismuth, Reactions (chemical)
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Effect of Oxygen, Nickel, and Cobalt. 203-212B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Impurity Elimination. 213-223B

Bismuth, Ternary systems
Crystallization Studies in the Lead-Rich Corner of the System Pb—Mg—Bi. 169-180B

Blades
See Turbine blades

Blast furnace practice
Correction to "Development of an Analytical Equation for Calculation of the Blast Furnace Fuel Rate". 478B

Blast furnaces
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) Liquid Alloys. 433-444B
Velocity and Absorption Coefficient of Ultrasonic Waves in Molten and Glassy Silicates and Borates. 549-555B
Phase Equilibria in the Al—Si—C System. 2005-2014A

Blistering, Corrosion effects
Atmospheric Corrosion of Magnetic-Film Structures. 158-161A

Blowing
Heat Transfer and Lance Clogging During Submerged Powder Injection. 105-117B
Measurement of Physical Characteristics of Bubbles in Gas—Liquid Plumes. I. An Improved Electroresistivity Probe Technique. 649-658B
Measurement of Physical Characteristics of Bubbles in Gas—Liquid Plumes. II. Local Properties of Turbulent Air—Water Plumes in Vertically Injected Jets. 659-671B
Physical Modeling of Gas/Liquid Mass Transfer in a Gas Stirred Ladle. 673-680B

Boiler scale
See Scale (corrosion)

Boiling water reactors
Low Temperature Sensitization of Type 304 Stainless Steel Pipe Weld Heat Affected Zone. 1483-1493A

Bombs (pressure vessels)
See Pressure vessels

Boron, Alloying additive
The Role of Boron in the Grain Refinement of Aluminum With Titanium. 603-619A
Discussion of "The Role of Boron in Ductilizing Ni_3Al". 1995-1996A
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Boron, Alloying elements
Development of a New Method to Produce Melts Suitable for the Production of Amorphous Fe—Si—B Materials. 71-79B
The Role of Boron in Ductilizing Ni_3Al. 425-428A

Boron, Composite materials
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A

Boundaries
See Grain boundaries

Brasses, Corrosion
A Closer Look at the Transgranular Stress Corrosion Cracking of Cu—30Zn in Cuprous Ammonia. 1539-1542A

Brasses, Mechanical properties
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A

Brittle fracture
Brittle Fracture: Weakest Link or Process Zone Control?en 1861-1875A

Bubbling
Measurement of Physical Characteristics of Bubbles in Gas—Liquid Plumes. I. An Improved Electroresistivity Probe Technique. 649-658B
Measurement of Physical Characteristics of Bubbles in Gas—Liquid Plumes. II. Local Properties of Turbulent Air—Water Plumes in Vertically Injected Jets. 659-671B
Physical Modeling of Gas/Liquid Mass Transfer in a Gas Stirred Ladle. 673-680B

Building up
See Hard surfacing

Burdening
See Blast furnace practice

Bursting strength, Microstructural effects
Crystal Slip Modeling of Small Strain Yield Behavior in Textured Copper Tubing. 255-264A

Cage zone melting
See Zone melting

Cage zone refining
See Zone melting

Cakes (metal)
See Ingots

Calcining
See Roasting

Capillary pressure
Capillary Forces Between Spheres During Agglomeration and Liquid Phase Sintering. 11-17A

Carbides
See also Silicon carbide
Tungsten carbide

Carbides, Crystal growth
The Clustering and Coarsening of Carbon Multiplets During the Aging of Martensite From Mössbauer Spectroscopy: *the Preprecipitation Stage of Epsilon Carbide.* 1371-1388A

Carbides, Crystal lattices
Ferrite and Carbide Morphologies In and Below the "Bay Region" of an Fe—0.19% C—2.30% Mo Alloy. 2047-2060A

Carbides, Electrical properties
Electrical Conduction Behavior of Cementite, Fe_3C. 485-486A

Carbon, Diffusion
Site Competition Between Sulfur and Carbon at Grain Boundaries and Their Effects on the Grain Boundary Cohesion in Iron. 1109-1115A

Carbon, Quaternary systems
An Experimental and Thermodynamic Study of the Fe—Cr—C—N System at 1273K. 1753-1766A

Carbon, Quinary systems
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A

Carbon, Reactions (chemical)
A Diffusion Model for Tungsten Powder Carburization. 969-974A

Carbon, Ternary systems
A Thermodynamic Evaluation of the C—Fe—W System. 175-188A
Phase Rule and Independent Components. 327-333A
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) Liquid Alloys. 433-444B
Discussion of "Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon" and Authors' Reply. 471-477B
Correction to "Phase Relationships in the Fe-Cr-C System at Solidification Temperatures". 478B
Phase Equilibria in the Al—Si—C System. 2005-2014A

Carbon compounds
See Carbides
Carbon monoxide
Carbonitrides
Tungsten carbide

Carbon fibers, Composite materials
On the Infiltration of Metal Matrix Composites. 1160-1163A

Carbon manganese steels, Phase transformations
Partition of Manganese During the Growth of Proeutectoid Ferrite Allotriomorphs in an Fe—1.6 at.% C—2.8 at.% Mn Alloy. 1547-1557A

Carbon monoxide, Reactions (chemical)
A Study of the Reaction of CO on Liquid Iron Alloys. 415-420B
Lime-Enhanced Carbon Monoxide Reduction of Cuprous Sulfide. 719-725B

Carbon steels
See also Aluminum killed steels
Carbon manganese steels

Carbon steels, Casting
Mathematical Model of the Thermal Processing of Steel Ingots. I. Heat Flow Model. 119-130B
Mathematical Model of the Thermal Processing of Steel Ingots. *II. Stress Model.* 131-147B

Carbon steels, Chemical analysis
Microdistribution of Cerium in Steel. 499-507A

Carbon steels, Crystal lattices
Effect of Manganese on the Recrystallization Texture of Phosphorus-Containing Low-Carbon Steel Sheet. 957-968A

Carbon steels, Diffusion
Correlation of Microstructural Parameters and Hydrogen Permeation in Carbon Steel. 717-721A

Carbon steels, Mechanical properties
Effect of Hydrogen on Four-Point Bend Tests of U-Notched AISI 1090 Steel. 335-340A
Deformation Characteristics of Retained Ferrite and *Transformed Ferrite in a Dual-Phase Steel.* 629-635A
Stochastic Modeling of the Independent Roles of Particle Size and Grain Size in Transgranular Cleavage Fracture. 641-651A
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A
An Experimental Investigation of Deformation-Induced Heating During Tensile Testing. 1035-1042A
The Effect of Phase Continuity on the Fatigue and Crack Closure Behavior of a Dual-Phase Steel. 1291-1298A
Role of Crack Tip Shielding in the Initiation and Growth of Long and Small Fatigue Cracks in Composite Microstructures. 1613-1629A
Effect of Deoxidation Practice and Heat Treatment on the Hydrogen Attack of Carbon Steels. 1971-1977A

Carbon steels, Metal working
Austenitic Formation During Thermomechanical Treatment of Eutectoid Steel. 153-154A

Carbon steels, Microstructure
On the Isolated Retained Austenite in a Dual-Phase Steel. 933-934A
Post-TMT Transformation Structure of Ferrite in Pearlite. 935-936A

Carbon steels, Nondestructive testing
Ultrasonic Characterization of Surface Modified Layers. 473-480A

Carbon steels, Phase transformations
Kinetics of Pearlite Spheroidization. 1359-1369A
Mechanisms of Pearlite Spheroidization. 1403-1414A

Carbon steels, Phases (state of matter)
The Influence of Starting Microstructure on the Retention and Mechanical Stability of Austenite in an Intercritically Annealed—Low Alloy Dual-Phase Steel. 5-9A

Carbon steels, Steel making
Fundamental Studies on the Deoxidation of Low Carbon Steels With Ferrosilicon. 583-589B

Carbon steels, Welding
Microstructure and Wear Properties of Laser Clad Fe—Cr—Mn—C Alloys. 313-322A

Carbon steels, X ray analysis
X-Ray Macrostress Determination on Textured Material; Use of the ODF for Calculating the X-Ray Compliances. 1229-1238A

Carbonitrides, Crystal growth
Carbonitride Precipitation in Niobium/Vanadium Microalloyed Steels. 211-222A
Austenite Recrystallization in Nb/V Microalloyed Steels. 481-483A

Carbothermic reactions
Phase Relations Associated With the Aluminum Blast Furnace: *Aluminum Oxycarbide Melts and Al—C—X* (X = Iron, Silicon) Liquid Alloys. 433-444B
Carbothermic Reduction of Chalcopyrite in the Presence of a *Desulfurizer in a Plasma Medium.* 519-527B
Phase Equilibria in the Al—Si—C System. 2005-2014A

Carburization
See Carburizing

Carburizing
A Diffusion Model for Tungsten Powder Carburization. 969-974A

Case carburizing
See Carburizing

Case depth
Ultrasonic Characterization of Surface Modified Layers. 473-480A

Case hardening
See Carburizing

Cast iron
See also White iron

Cast iron, Alloy development
Amorphous Fe—C—Si Alloys Prepared by Melt Quenching. 715-717A

Cast iron, Melting
Content and Microdistribution of Spheroidizer in Various Phases of Cast Iron. 543-553A

Cast iron, Phases (state of matter)
Orientation Relationships in Graphitic Cast Irons. 1907-1913A

Cast iron, Refining
Gibbs Energies of Formation of Rare Earth Oxysulfides. 163-168B

Cast iron, Structural hardening
The Clustering and Coarsening of Carbon Multiplets During the Aging of Martensite From Mössbauer Spectroscopy: *the Preprecipitation Stage of Epsilon Carbide.* 1371-1388A

Casting
See Chill casting
Continuous casting
Ingot casting
Melt spinning
Pressure casting

Casting defects
Mathematical Model of the Thermal Processing of Steel Ingots. I. Heat Flow Model. 119-130B

Castings
See also Ingots

Castings, Mechanical properties
A Fractographic Investigation of Thermal Embrittlement in Cast Duplex Stainless Steel. 1941-1949A

Cathodic coatings (oxide)
See Oxide coatings

Cation exchanging
Software for Computation of Aqueous Phase Species Distri-*butions and Solvent Extraction With Liquid Cation Ex-*changers. 743-746B

Cavitation
Stochastic Processes in Creep Cavitation. *1835-1842A*
Stochastic Aspects of Creep Cavitation in Ceramics. 1843-1854A

Cavitation, Deformation effects
*An Experimental Study on the Alignment of Cavities in a Su-*perplastic Commercial Copper Alloy. 63-67A

Cavitation, Radiation effects
Effect of Irradiation on Failure Mode During Creep. *79-84A*

Cells
See Electrolytic cells

Cellular precipitates
Cellular—Dendritic Transition in Directionally Solidified Bi-*nary Alloys.* *167-170A*

Cemented carbides, Mechanical properties
Experimental Study of the Mechanics of Fracture in WC—Co *Alloys.* *1299-1308A*

Cemented carbides, Structural hardening
Transformation-Toughening in Cemented Carbides. I. Binder *Composition Control.* *2163-2173A*
Transformation-Toughening in Cemented Carbides. II. Ther-momechanical Treatments. 2175-2180A

Cementite, Electrical properties
Electrical Conduction Behavior of Cementite, Fe_3C. 485-486A

Ceramic powders, Microstructure
A Study of Microstructures of Tungsten Carbide Powder. *753-758A*

Ceramics, Mechanical properties
Weibull Statistical Fracture Theory for the Fracture of Ce-*ramics.* *1829-1834A*
Stochastic Aspects of Creep Cavitation in Ceramics. 1843-1854A

Cerium, Alloying additive
Content and Microdistribution of Spheroidizer in Various Phases of Cast Iron. 543-553A
Trace Element Effects on Ductility and Fracture of Ni—Cr—*Ce Alloys.* *1239-1248A*

Cerium, Chemical analysis
Microdistribution of Cerium in Steel. 499-507A

Cerium, Phase transformations
The γ to α Phase Transformation in Cerium. 35-42A

Chalcogenides
See Sulfides

Chalcopyrite, Reduction (chemical)
The Leaching of Chalcopyrite With Cupric Chloride. 31-39B
*Leaching Studies of Chalcopyrite and Sphalerite With Hypo-*chlorous Acid. 315-323B
The Leaching of Chalcopyrite With Ferric Sulfate. 489-496B
Mixed-Control Kinetics of Oxygen Leaching of Chalcopyrite and Pyrite From Porous Primary Ore Fragments. 497-503B
Leaching of $CuFeS_2$ by Aqueous $FeCl_3$, HCl, and NaCl: Ef-*fects of Solution Composition and Limited Oxidant.* 505-510B
Carbothermic Reduction of Chalcopyrite in the Presence of a Desulfurizer in a Plasma Medium. 519-527B

Chemical analysis
See Microanalysis

Chemical attack
See Intergranular corrosion

Chemical equilibrium
Chemical Equilibrium Studies on the Nickel Sulfate—Acetate *Buffer/β-Alkyl-8-Hydroxy—Quinoline—Xylene System.* 399-407B

Chemical kinetics
See Reaction kinetics

Chemical properties
See Heat of formation

Chemical tests
See Microanalysis

Chemistry
See Physical chemistry
Surface chemistry

Chill casting
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. *189-200A*

Chlorination
Chlorination of Commercial Molybdenite Concentrate in a Fluidized Bed Reactor. 445-449B

Chlorination, Radiation effects
Photolytic Effects in Alumina Chlorination. 459-470B

Chlorine, Environment
Ignition of Nickel in Environments Containing Oxygen and Chlorine. 1099-1107A

Chromium, Alloying elements
Effects of Hydrogen on Low Temperature Hardening and Em-brittlement of V—Cr Alloys. 1593-1601A
Oxidation of Fe—7Cr—12Ni—(0-6)Al—(0-7)Si Alloys. 1805-1812A
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Chromium, Diffusion
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. I. Diffusion Paths and Microstructures. 2061-2073A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and *1200°C. II. Diffusion Coefficients and Predicted Concen-*tration Profiles. 2075-2086A
Predicting Diffusion Paths and Interface Motion in $\gamma/\gamma + \beta$, Ni—Cr—Al Diffusion Couples. 2087-2094A

Chromium, Quaternary systems
An Experimental and Thermodynamic Study of the Fe—Cr—C—N System at 1273K. 1753-1766A

Chromium, Quinary systems
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A

Chromium, Ternary systems
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
Correction to "Phase Relationships in the Fe-Cr-C System at *Solidification Temperatures".* *478B*
A Thermodynamic Analysis and Calculation of the Fe—Ni—Cr Phase Diagram. 733-745A
A Thermodynamic Analysis of the Fe—Cr—N System. *1745-1752A*

Chromium molybdenum nickel steels
See Nickel chromium molybdenum steels

Chromium molybdenum steels
See also Nickel chromium molybdenum steels

Chromium molybdenum steels, Alloy development
Microstructure and Mechanical Properties of a 3Cr—1.5Mo Steel. 1279-1290A

Chromium molybdenum steels, Corrosion
*Microstructural Effects on the Stress Corrosion Cracking Be-*havior of Medium and High Strength Steels. 1011-1022A

Chromium molybdenum steels, Metallography
*Nonequilibrium Solute Segregation to Austenite Grain Bound-*aries in Low Alloy Ferritic and Austenitic Steels. 399-406A

Chromium molybdenum steels, Microstructure
The Distribution of Palladium in a Palladium-Modified 4130 Steel. 519-523A

Chromium molybdenum steels, Welding
Hydrogen Attack Behavior of the Heat Affected Zone of a 2.25Cr—1Mo Steel Weldment. 1309-1312A

Chromium nickel molybdenum steels
See Nickel chromium molybdenum steels

Chromium nickel steels
See Nickel chromium steels

Chromium steels
See also Austenitic stainless steels
Chromium molybdenum steels
Duplex stainless steels
Ferritic stainless steels
Nickel chromium molybdenum steels
Nickel chromium steels
Stainless steels

Chromium steels, Mechanical properties
Effect of Isothermal Martensite on Properties of an AISI *52100 Ball Bearing Steel.* *1531-1532A*

Chromium steels, Phase transformations
Isothermal Martensite Formation in an AISI 52100 Ball Bear-*ing Steel.* *1389-1394A*

Chromium steels, Phases (state of matter)
The Effect of Chromium in High Carbon Bearing Steels. 1897-1906A

Chromium steels, Welding
Microstructure and Wear Properties of Laser Clad Fe—Cr—Mn—C Alloys. 313-322A

Chromizing
CVD Chromized Nickel. 617-619B

Circuits
See Integrated circuits

Cleaning
See Gas scrubbing

Cleavage
A Micromechanical Model for Cleavage-Crack Reinitiation. 1053-1059A

Coal gasification
Thermodynamics and Kinetics of Coal Gasification in a Liq-uid Iron Bath. 347-354B
Hot Desulfurization of Coal Gas With Copper. 603-609B

Coating
See Chromizing

Coatings
See Oxide coatings
Protective coatings
Vapor deposited coatings

Cobalt, Corrosion
Mechanisms in the Simultaneous Erosion—Oxidation Attack *of Nickel and Cobalt at High Temperature.* 1785-1803A

Cobalt, Extraction
The Leaching Kinetics of Cobalt and Nickel From Aluminum-*Coprecipitated Products.* 635-640B

Cold deformation
See Deformation

Cold ductility
See Ductility

Cold formability
See Formability

Cold rolling
Austenitic Formation During Thermomechanical Treatment of Eutectoid Steel. 153-154A

Cold working
See Cold rolling

Columbium base alloys
See Niobium base alloys

Columnar structure
Permeability for Flow of Interdendritic Liquid in Columnar—Dendritic Alloys. 245-256B
The Columnar to Equiaxed Transition in Tin—Lead Alloys. 425-432B
Growth of Interdendritic Eutectic in Directionally Solidified Al—Si Alloys. 1137-1142A

Comminution
A Study of Microstructures of Tungsten Carbide Powder. 753-758A

Compacting
See also Hot isostatic pressing
Hot Extrusion of Aluminum Powder at Low Reduction Ratios: Analytical and Metallographic Studies. 703-711B

Compacts
See Powder compacts
Sintered compacts

Composite materials
See also Fiber composites
Mechanical alloying

Composite materials, Casting
On the Infiltration of Metal Matrix Composites. 1160-1163A

Composite materials, Mechanical properties
Superplasticity in a High Strength Powder Aluminum Alloy With and Without SiC Reinforcement. 653-661A
Fracture Characteristics of Al—4% Mg Mechanically Alloyed With SiC. *2115-2128A*

Compression casting
See Pressure casting

Compression strength
See Compressive strength

Compressive strength, Composition effects
Temperature and Composition Dependence of the Yield Stress of the Ag—Mg Intermetallic β' Phase. 1153-1154A

Compressive strength, High temperature effects
*Elevated Temperature Deformation Behavior of an Al—*8.4Fe—3.6Ce Alloy. 893-902A

Compressive yield strength
See Compressive strength

Computer programs
Modeling of Fixed Bed Heat Storage Units Utilizing Phase *Change Materials.* *339-346B*
Software for Computation of Aqueous Phase Species Distributions and Solvent Extraction With Liquid Cation Exchangers. 743-746B

Computer simulation
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A

Concast
See Continuous casting

Concentration (stress)
See Stress concentration

Conductivity
See Resistivity
Superconductivity

Conductivity (electrical)
See Resistivity

Constitutional diagrams
See Phase diagrams

Contact stresses
Effect of Isothermal Martensite on Properties of an AISI 52100 Ball Bearing Steel. 1531-1532A

Contact testing
See Ultrasonic testing

Contacts (electric)
See Electric contacts

Continuous casting
The Effect of Tundish Wall Inclination on the Fluid Flow and *Mixing: a Modeling Study.* 81-92B
Electromagnetic and Fluid Flow Phenomena in a Mercury Model System of the Electromagnetic Casting of Aluminum. 539-548B

Control
See Process control

Cooling
See Supercooling

Cooling rate
Liquid Separation Effects of Fe—Cu Alloys Solidified Under *Different Cooling Rates.* 565-575B

Copper, Alloying elements
Densities of Aluminum-Rich Aluminum—Copper Alloys During Solidification. 721-723A

Copper, Crystal lattices
The Representation of Orientation Distributions. *1083-1092A*

Copper, Extraction
The Measurement of the Diffusion Coefficient of Uranium(VI) *in Aqueous Uranyl Sulfate Solutions.* *19-23B*
The Leaching of Chalcopyrite With Cupric Chloride. 31-39B
Evaluation of the Behavior of Selenium in Silicate Slag. 181-187B
Antimony Activities in Copper Mattes. 189-194B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Effect of Oxygen, Nickel, and Cobalt. 203-212B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Impurity Elimination. 213-223B
*Leaching Studies of Chalcopyrite and Sphalerite With Hypo-*chlorous Acid. 315-323B
Kinetics of Extraction in the Cupric-Chloro-Quaternary Amine System. *483-488B*
The Leaching of Chalcopyrite With Ferric Sulfate. 489-496B
Mixed-Control Kinetics of Oxygen Leaching of Chalcopyrite and Pyrite From Porous Primary Ore Fragments. 497-503B
*Leaching of $CuFeS_2$ by Aqueous $FeCl_3$, HCl, and NaCl: Ef-*fects of Solution Composition and Limited Oxidant. 505-510B
Carbothermic Reduction of Chalcopyrite in the Presence of a Desulfurizer in a Plasma Medium. *519-527B*
*Lime-Enhanced Carbon Monoxide Reduction of Cuprous Sul-*fide. 719-725B

Copper, Mechanical properties
*Crystal Slip Modeling of Small Strain Yield Behavior in Tex-*tured Copper Tubing. 255-264A
Theory of Plastic and Viscous Deformation. 811-826A
The Influence of Grain Size on the Erosion Rate of Metals. *1043-1052A*

Copper, Physical properties
Interfacial Tension Between Low Pressure Argon Plasma and Molten Copper and Iron. *597-601B*

Copper, Reactions (chemical)
Hot Desulfurization of Coal Gas With Copper. 603-609B

Copper, Ternary systems
A Practical Solution for the Diffusion Equations in Binary and Multicomponent Systems With Constant Intrinsic Diffusion Coefficients. 801-809A
Predicting the Occurrence of Zero Flux Planes. 1565-1568A
The Coordination Cluster Theory: Extension to Multicompo-nent Systems. 1779-1783A

Copper base alloys
See also Brasses

Copper base alloys, Crystal growth
Liquid Separation Effects of Fe—Cu Alloys Solidified Under Different Cooling Rates. 565-575B

Copper base alloys, Mechanical properties
*An Experimental Study on the Alignment of Cavities in a Su-*perplastic Commercial Copper Alloy. 63-67A

Copper base alloys, Structural hardening
Ductile Two-Phase Alloys: Prediction of Strengthening at High Strains. 1249-1256A

Copper compounds, Reduction (chemical)
*Lime-Enhanced Carbon Monoxide Reduction of Cuprous Sul-*fide. 719-725B

Copper mattes, Reactions (chemical)
Antimony Activities in Copper Mattes. *189-194B*
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Effect of Oxygen, Nickel, and Cobalt. 203-212B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper *Mattes—Impurity Elimination.* *213-223B*

Copper ores
See Chalcopyrite

Core hardness
See Hardness

Corrosion
See Atmospheric corrosion
Corrosion mechanisms
Erosion-corrosion
Intergranular corrosion
Scale (corrosion)

Corrosion cracking
See Stress corrosion cracking

Corrosion effects
See Scale (corrosion)

Corrosion mechanisms
See also Erosion-corrosion
Intergranular corrosion
Scale (corrosion)
A Closer Look at the Transgranular Stress Corrosion Cracking of Cu—30Zn in Cuprous Ammonia. 1539-1542A

Corrosion products
See Scale (corrosion)

Corrosion rate, Microstructural effects
*Correlation of Microstructural Parameters and Hydrogen Per-*meation in Carbon Steel. 717-721A

Corrosion resistance, Welding effects
Low Temperature Sensitization of Type 304 Stainless Steel Pipe Weld Heat Affected Zone. 1483-1493A

Corrosion resistant alloys, Structural hardening
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A

Corrosion resistant steels, Alloy development
Oxidation of Fe—7Cr—12Ni—(0-6)Al—(0-7)Si Alloys. 1805-1812A

Corrosion resistant steels, Microstructure
Microstructure—Composition Relationships and M_s Temperatures in Fe—Cr—Mn—N Alloys. 767-775A

Cost savings
See Economics

CO2 arc welding
See Gas metal arc welding

Crack growth
See Crack propagation

Crack initiation
Grain Size and Hydrogen Concentration Effects on the Ductility Return in a Refractory Alloy. 857-863A

Crack initiation, Microstructural effects
Role of Crack Tip Shielding in the Initiation and Growth of Long and Small Fatigue Cracks in Composite Microstructures. 1813-1829A
The Effect of Microstructure on the Mode of Monotonic Fracture, Fatigue Crack Initiation, and Stage I Crack Growth in an Fe—21% Cr—11% Ni Heat Resisting Steel. 1951-1960A

Crack propagation
Comparison of Hydrogen Gas Embrittlement of Austenitic and Ferritic Stainless Steels. 123-134A
Effect of Hydrogen on Four-Point Bend Tests of *U*-Notched AISI 1090 Steel. 335-340A
The Influence of Crack Length on Fatigue Crack Growth in Deep Sharp Notches. 429-435A
Fatigue Crack Growth in MAR-M200 Single Crystals. 581-591A
Elevated-Temperature Fatigue Crack Growth Behavior of MAR-M200 Single Crystals. 593-602A
A Micromechanical Model for Cleavage-Crack Reinitiation. 1053-1059A
Combined Mode I—Mode III Fracture of a High Strength Low-*Alloy Steel.* 1061-1072A
Experimental Study of the Mechanics of Fracture in WC—Co Alloys. 1299-1308A
*Role of Third Order Statistics in Discriminating Among Mod*els of Fatigue Crack Growth in Metals. 1855-1859A

Crack propagation, Alloying effects
Effects of Boron, Carbon, and Zirconium on the Structure and Properties of a P/M Nickel Base Superalloy. 69-77A

Crack propagation, Microstructural effects
Fatigue Behavior of Carburized Steel With Internal Oxides Near the Surface. 156-158A
Microstructural Effects and Crack Closure During Near Threshold Fatigue Crack Propagation in a High Strength *Steel.* 865-876A
The Effect of Phase Continuity on the Fatigue and Crack Closure Behavior of a Dual-Phase Steel. 1291-1298A
Effects of Grain Size and Precipitate Size on the Fatigue *Crack Growth Behavior of Alloy 718 at 427°C.* 1431-1449A
Role of Crack Tip Shielding in the Initiation and Growth of Long and Small Fatigue Cracks in Composite Microstructures. 1613-1629A
The Effect of Microstructure on the Mode of Monotonic Fracture, Fatigue Crack Initiation, and Stage I Crack Growth in an Fe—21% Cr—11% Ni Heat Resisting Steel. 1951-1960A

Crack propagation, Radiation effects
Effect of Irradiation on Failure Mode During Creep. 79-84A

Crack resistance
See Crack propagation

Cracking (fracturing)
See Crack initiation
Stress corrosion cracking

Creep (materials)
See also Creep life
Creep rate
Creep rupture strength
Creep strength
*Theory of Mobile Dislocation Density: Application to the De*formation of 304 Stainless Steel. 51-62A
Internal Stress Superplasticity in Anisotropic Polycrystalline *Zinc and Uranium.* 451-462A
The Dislocation Microstructure of Aluminum Deformed to Very Large Steady-State Creep Strains. 835-846A
Deformation Mechanisms of a Rapidly Solidified Al—*8.8Fe—3.7Ce Alloy.* 1713-1719A
Stochastic Processes in Creep Cavitation. 1835-1842A
Stochastic Aspects of Creep Cavitation in Ceramics. 1843-1854A
Creep and Ductility in an Al—Cu Solid-Solution Alloy. 2105-2114A

Creep (materials), Alloying effects
Effects of Boron, Carbon, and Zirconium on the Structure and *Properties of a P/M Nickel Base Superalloy.* 69-77A

Creep (materials), Microstructural effects
Microstructure, Creep, and Tensile Deformation in Ti—6Al—2Nb—1Ta—0.8Mo. 1451-1468A

Creep life, Microstructural effects
Effect of Initial Gamma Prime Size on the Elevated Temperature Creep Properties of Single Crystal Nickel Base Superalloys. 1961-1970A

Creep limit
See Creep (materials)

Creep properties
See Creep (materials)

Creep rate
Creep and Ductility in an Al—Cu Solid-Solution Alloy. 2105-2114A

Creep rate, Corrosion effects
A Model for the Oxide Growth Stress and Its Effect on the Creep of Metals. 975-986A

Creep rate, Diffusion effects
Effect of Hydrogen on Creep Behavior of Ti—6Al—4V Alloy at Room Temperature. 1125-1130A

Creep rate, Microstructural effects
*Effect of Initial Gamma Prime Size on the Elevated Tempera*ture Creep Properties of Single Crystal Nickel Base Superalloys. 1961-1970A

Creep rate, Stress effects
The Effect of the Lower Stress Level on the Cyclic Creep Behavior of an ODS Superalloy. 1029-1033A

Creep rate, Temperature effects
Analysis of the Creep Behavior of Silicon Carbide Whisker Reinforced 2124 Aluminum (T4). 109-114A

Creep resistance
See Creep strength

Creep rupture strength, Microstructural effects
*Microstructure, Creep, and Tensile Deformation in Ti—6Al—*2Nb—1Ta—0.8Mo. 1451-1468A

Creep rupture strength, Radiation effects
Effect of Irradiation on Failure Mode During Creep. 79-84A

Creep rupture strength, Stress effects
The Effect of the Lower Stress Level on the Cyclic Creep Behavior of an ODS Superalloy. 1029-1033A

Creep strength, Corrosion effects
A Model for the Oxide Growth Stress and Its Effect on the *Creep of Metals.* 975-986A

Creep strength, Diffusion effects
Effect of Hydrogen on Creep Behavior of Ti—6Al—4V Alloy *at Room Temperature.* 1125-1130A

Creeping
See Creep (materials)

Critical materials
See Strategic materials

Critical temperature
See Eutectic temperature

Cross tension test
See Tension tests

Crushing strength
See Compressive strength

Cryogenic properties
*Mechanical Behavior of Aluminum—Lithium Alloys at Cryo*genic Temperatures. 1695-1701A
Cryogenic Properties of a P/M Ni_3Al—B Alloy. 1819-1820A

Cryolite
Melt/Freeze Heat Transfer Measurements in Cryolite-Based Electrolytes. 391-398B
Activities in the System LiF—NaF—AlF_3. 409-414B

Crystal defects
See also Dislocations
Interstitial defects
Stacking faults
The Growth of Single Crystal Terfenol-D Crystals. 223-231A
A Study of Microstructures of Tungsten Carbide Powder. 753-758A

Crystal lattices
See Superlattices

Crystal orientation
See Crystal structure

Crystal pulling
The Growth of Single Crystal Terfenol-D Crystals. 223-231A

Crystal structure
See also Equiaxed structure
Lattice Modulation and Formation of Lamellar Duplex *Ferrite/Cubic Carbide Microstructure in Rapidly Solidified* Fe—Ni—Al—C Alloys. 759-766A
Phase Transformations in Ti_2Ni_3 Precipitates Formed in *Aged Ti—52 at.% Ni.* 785-799A

Crystal structure, Alloying effects
DO_3-B2-α Phase Relations in Fe—Al—Ti Alloys. 509-518A

Crystallinity
See Crystal structure

Crystallization
See also Recrystallization
Crystallization Studies in the Lead-Rich Corner of the System Pb—Mg—Bi. 169-180B

Crystals
See Single crystals

Curie temperature
Strain Induced Martensite Formation in Stainless Steel. 201-210A

Current contacts
See Electric contacts

Curves
See Stress strain curves
TTT curves

Cycles
See Thermal cycling

Cyclical heating
See Thermal cycling

Decomposition
See Eutectoid decomposition
Phase decomposition

Deep carburizing
See Carburizing

Defect annealing
Pulsed Laser Control of Surface Solidification. 354-357A

Defects
See Casting defects
Crystal defects
Dislocations
Interatitial defects
Stacking faults

Deformability
See Formability

Deformation
See also Elastic deformation
Plastic deformation

Deformation, High temperature effects
Elevated Temperature Deformation Behavior of an Al—8.4Fe—3.6Ce Alloy. 893-902A

Deforming
See Deformation

Dendrite
See Dendritic structure

Dendritic structure
Cellular—Dendritic Transition in Directionally Solidified Binary Alloys. 167-170A
Cellular Microstructure of Chill Block Melt Spun Ni—Mo Alloys. 1663-1678A

Dendritic structure, Crystal growth
Equiaxed Dendrite Growth in Alloys at Small Supercooling. 341-345A
Microstructural Characterization of a Rapidly Solidified Al—Mg—Mn Powder Alloy. 407-416A
Dendritic Growth of Undercooled Nickel—Tin. I. 915-924A
Dendritic Growth of Undercooled Nickel—Tin. II. 925-932A

Densification, Size effects
Densification Mechanism Maps for Hot Isostatic Pressing (HIP) of Unequal Sized Particles. 97-107A

Density
Densities of Aluminum-Rich Aluminum—Copper Alloys During Solidification. 721-723A

Deoxidation
See Deoxidizing

Deoxidizing
Gibbs Energies of Formation of Rare Earth Oxysulfides. 163-168B
A Study of the Reaction of CO on Liquid Iron Alloys. 415-420B
Fundamental Studies on the Deoxidation of Low Carbon Steels With Ferrosilicon. 583-589B

Dephosphorizing
Dynamics of the Hot Metal Dephosphorization With Na_2O Slags. 687-693B

Deposition
See Chromizing
Vapor deposition

Desulfurizing
Gibbs Energies of Formation of Rare Earth Oxysulfides. 163-168B
Hot Desulfurization of Coal Gas With Copper. 603-609B

Deuterium, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Titanium Alloys. 249-254A

Diagrams
See Phase diagrams

Diamond pyramid hardness
Some Remarks on the Hardness and Yield Strength of Aluminum Alloy 7075 as a Function of Retrogression Time. 350-353A
Preparation of Amorphous Ni—Pd—P Particles by Melt Ejection Into Stirred Water and Their Hardness and Thermal Stability. 377-383A

Diffusion
Precipitate Shape Evolution Under Applied Stress—Thermodynamics and Kinetics. 233-247A
Hydrogen and Deuterium Diffusion in Vanadium—Titanium Alloys. 249-254A
Equiaxed Dendrite Growth in Alloys at Small Supercooling. 341-345A
A Study of the Coarsening of Liquid—Solid Mixtures Using Synchrotron Radiation Microradiography. 487-490A

Diffusion coating (process)
See Chromizing

Diffusion coefficient
See Diffusion

Diffusion couples
See Diffusion

Diffusivity
The Diffusion and Solubility of Oxygen in Solid Nickel. 43-50A
Interdiffusion in a Dilute Solid Solution of Al—Li Alloy Measured by Electrical Resistance. 1536-1538A
Predicting the Occurrence of Zero Flux Planes. 1565-1568A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. I. Diffusion Paths and Microstructures. 2061-2073A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. II. Diffusion Coefficients and Predicted Concentration Profiles. 2075-2086A
Predicting Diffusion Paths and Interface Motion in $\gamma/\gamma + \beta$, Ni—Cr—Al Diffusion Couples. 2087-2094A

Diffusivity, Microstructural effects
Correlation of Microstructural Parameters and Hydrogen Permeation in Carbon Steel. 717-721A

Dimensions
See Particle size

Dioxides
See Silicon dioxide

Direct reduction
See also Hydrogen reduction
Correction to "Development of an Analytical Equation for Calculation of the Blast Furnace Fuel Rate". 478B
Lime-Enhanced Carbon Monoxide Reduction of Cuprous Sulfide. 719-725B

Directional solidification
Cellular—Dendritic Transition in Directionally Solidified Binary Alloys. 167-170A

Directionally solidified eutectics, Electrical properties
Electrical Properties of Al—In—Sn Alloys Directionally Solidified in High and Low Gravitational Fields. 1511-1517A

Discontinuous precipitates
See Cellular precipitates

Dislocation climb
See Dislocation mobility

Dislocation density
Theory of Mobile Dislocation Density: Application to the Deformation of 304 Stainless Steel. 51-62A

Dislocation mobility
Theory of Mobile Dislocation Density: Application to the Deformation of 304 Stainless Steel. 51-62A

Dislocation mobility, Deformation effects
Theory of Plastic and Viscous Deformation. 811-826A

Dislocations, Deformation effects
The Dislocation Microstructure of Aluminum Deformed to Very Large Steady-State Creep Strains. 835-846A

Dispersion hardening
Elevated Temperature Deformation Behavior of an Al—8.4Fe—3.6Ce Alloy. 893-902A

Dispersion hardening, Cooling effects
Effect of Quench Rate on Microstructure and Tensile Properties of AISI 4320 and 4340 Steels. 115-121A

Dispersion hardening alloys, Crystal growth
Abnormal Grain Growth Behavior of an Oxide Dispersion *Strengthened Superalloy.* 777-784A

Displacements (lattice)
See Interstitial defects

Dissolution
Leaching Behavior of Ilmenite With Sulfuric Acid. 325-330B
Kinetics of the Dissolution of Scheelite in Aqueous Na_4EDTA Solutions. 331-337B

Dissolving
See Dissolution

Dual phase steels, Mechanical properties
Deformation Characteristics of Retained Ferrite and Transformed Ferrite in a Dual-Phase Steel. 629-635A
The Effect of Phase Continuity on the Fatigue and Crack Closure Behavior of a Dual-Phase Steel. 1291-1298A
Role of Crack Tip Shielding in the Initiation and Growth of Long and Small Fatigue Cracks in Composite Microstructures. 1613-1629A

Dual phase steels, Microstructure
On the Isolated Retained Austenite in a Dual-Phase Steel. 933-934A

Ductile brittle transition, Alloying effects
Trace Element Effects on Ductility and Fracture of Ni—Cr—Ce Alloys. 1239-1248A
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Ductile brittle transition, Composition effects
The Relationship Between Toughness and Microstructure in Iron—High Manganese Binary Alloys. 1073-1081A

Ductile brittle transition, Diffusion effects
Site Competition Between Sulfur and Carbon at Grain Boundaries and Their Effects on the Grain Boundary Cohesion in Iron. 1109-1115A

Ductile brittle transition, Microstructural effects
Stochastic Modeling of the Independent Roles of Particle Size and Grain Size in Transgranular Cleavage Fracture. 641-651A

Ductile fracture
The Role of Boron in Ductilizing Ni_3Al. 425-428A
Effects of Microstructure on the Erosion of Al—Si Alloys by Solid Particles. 437-450A
The Effect of Hydrogen on Fracture Toughness of the Fe—Ni—Co Superalloy IN903. 1469-1482A
Modeling of Local Strains in Ductile Fracture. 1877-1886A

Ductile fracture, Deformation effects
On the Influence of Strain-Path Changes on Fracture. 637-639A

Ductile fracture, Microstructural effects
Void/Pore Distributions and Ductile Fracture. 1887-1895A

Ductility
Cryogenic Properties of a P/M Ni_3Al—B Alloy. 1819-1820A

Creep and Ductility in an Al—Cu Solid-Solution Alloy. 2105-2114A

Ductility, Alloying effects
Trace Element Effects on Ductility and Fracture of Ni—Cr—Ce Alloys. 1239-1248A
Discussion of "The Role of Boron in Ductilizing Ni_3Al". 1995-1996A
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Ductility, Deformation effects
On the Influence of Strain-Path Changes on Fracture. 637-639A
Combined Influence of Geometric Defects and Thermal Gradients on Tensile Ductility. 2143-2150A

Ductility, Heating effects
Interpretation of the Effects of High Austenitizing Temperature on Toughness Behavior in a Low Alloy, High Strength Steel. 1569-1585A
Processing Properties Relationships of Ti—10V—2Fe—3Al. 2095-2103A

Ductility, Microstructural effects
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A
Identification of Dispersoids in Al—Mg Alloys Containing Manganese. 1353-1357A
The Relative Influence of Dynamic and Static Precipitation on the Hot Ductility of Microalloyed Steels. 1929-1939A

Ductility, Size effects
Grain Size and Hydrogen Concentration Effects on the Ductility Return in a Refractory Alloy. 857-863A

Ductility, Temperature effects
A Model for High Temperature Ductility Losses in α—β Titanium Alloys. 483-485A

Duplex stainless steels, Mechanical properties
Microstructural Change During Superplastic Deformation of δ-Ferrite/Austenite Duplex Stainless Steel. 663-672A
A Fractographic Investigation of Thermal Embrittlement in Cast Duplex Stainless Steel. 1941-1949A

Dynamics
See Kinetics

Dysprosium compounds, Crystal growth
The Growth of Single Crystal Terfenol-D Crystals. 223-231A

Economics
United States Extractive Metallurgy—the 1980s and Beyond. 289-313B

Elastic deformation
Theory of Plastic and Viscous Deformation. 811-826A
Elastic—Plastic Analysis of Hardened Layers in Rims Subjected to Repeated Rolling Contacts. 827-833A

Electric assemblies
See Electric devices

Electric circuits
See Integrated circuits

Electric components
See Electric devices

Electric conductors (materials)
See Electrolytes
Superconductors

Electric contacts
Low-Temperature Electrical Characteristics of the Au/Si Interface. 701-705A

Electric devices, Fabrication
Low-Temperature Electrical Characteristics of the Au/Si Interface. 701-705A

Electric welding
See Gas metal arc welding
Plasma arc welding
Spot welding
Submerged arc welding

Electrical conductance
See Electrical resistance

Electrical conductivity
See Resistivity

Electrical impedance
See Electrical resistance

Electrical properties
See Resistivity
Superconductivity

Electrical resistance, Temperature effects
Electrical Conduction Behavior of Cementite, Fe_3C. 485-486A

Electrical resistivity
See Resistivity

Electroceramics
See Ceramics

Electrogas welding
See Gas metal arc welding

Electrohydrodynamics
See Magnetohydrodynamics

Electrolysis
See Electrowinning
Fused salt electrolysis
Reduction (electrolytic)

Electrolytes, Electrical properties
Electrical Conductivity of Acidic Sulfate Solution. 41-47B
Discussion of "Electrical Conductivity of Acidic Sulfate Solution" and Author's Reply. 741-748B

Electrolytic cells
Melt/Freeze Heat Transfer Measurements in Cryolite-Based Electrolytes. 391-398B

Electrolytic reduction
See Reduction (electrolytic)

Electromagnetic fields
Electromagnetic and Fluid Flow Phenomena in a Mercury Model System of the Electromagnetic Casting of Aluminum. 539-548B

Electromagnetic stirring
A Comprehensive Study of the Induced Current, the Electromagnetic Force Field, and the Velocity Field in a Complex Electromagnetically Driven Flow System. 529-538B

Electrometallurgy
Calculation of Equilibrium Species for the Aqueous Solution Systems of UO_2SO_4—$U(SO_4)_2$—H_2SO_4—HF and UO_2Cl_2—UCl_4—HCl—HF at 298K. 49-57B

Electron beam heating
Ultrasonic Characterization of Surface Modified Layers. 473-480A

Electron microscopy
See Transmission electron microscopy

Electronic assemblies
See Electric devices

Electronic components
See Electric devices

Electronic devices
See Electric devices

Electroreduction
See Electrowinning

Electrorefining
See Electroslag refining

Electroslag process
See Electroslag refining

Electroslag refining
Effect of Deoxidation Practice and Heat Treatment on the Hydrogen Attack of Carbon Steels. 1971-1977A

Electrowinning
The Measurement of the Diffusion Coefficient of Uranium(VI) in Aqueous Uranyl Sulfate Solutions. 19-23B
Electrical Conductivity of Acidic Sulfate Solution. 41-47B
Discussion of "Electrical Conductivity of Acidic Sulfate Solution" and Author's Reply. 741-748B

Elongation
An Experimental Study on the Alignment of Cavities in a Superplastic Commercial Copper Alloy. 63-67A

Elongation, Alloying effects
Microstructures and Mechanical Properties of Ni_3Al Alloyed With Iron Additions. 1265-1277A

Elongation, Impurity effects
The Effect of Low Melting Point Impurities on the Properties of Aluminum—Lithium Alloys. 2181-2193A

Elongation, Microstructural effects
The Role of Boron in Ductilizing Ni_3Al. 425-428A
Granular Product in a High Strength, Low Alloy Containing Molybdenum and Niobium. 1923-1927A

Embrittlement
See also Hydrogen embrittlement
A Fractographic Investigation of Thermal Embrittlement in Cast Duplex Stainless Steel. 1941-1949A

Endurance limit
See Fatigue limit

Energy
See Activation energy
Free energy
Heat of formation

Energy conservation
See Heat recovery

Energy of activation
See Activation energy

Engineering
See Mechanical engineering

Enthalpy
Study of the Enthalpies of Formation in the Gd—(Fe, Co, Pd, Pt) Systems. 903-907A

Entropy
Calculating Activities From the Phase Diagram Involving an Intermediate Compound Using Its Entropy of Formation. 323-326A

Equiaxed structure
The Columnar to Equiaxed Transition in Tin—Lead Alloys. 425-432B
Growth of Interdendritic Eutectic in Directionally Solidified Al—Si Alloys. 1137-1142A

Equiaxed structure, Crystal growth
Equiaxed Dendrite Growth in Alloys at Small Supercooling. 341-345A

Equilibrium
See Chemical equilibrium

Equilibrium constants
See Chemical equilibrium

Equilibrium diagrams
See Phase diagrams

Erosion
See Erosion-corrosion
Impingement erosion

Erosion rate, Microstructural effects
The Influence of Grain Size on the Erosion Rate of Metals. 1043-1052A

Erosion resistance, Microstructural effects
Effects of Microstructure on the Erosion of Al—Si Alloys by Solid Particles. 437-450A

Erosion-corrosion
Mechanisms in the Simultaneous Erosion—Oxidation Attack of Nickel and Cobalt at High Temperature. 1785-1803A

Eutectic reactions
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A

Eutectic reactions, Cooling effects
Effect of Undercooling on the Microstructure of Ni—35 at.% Mo (Eutectic) and Ni—38 at.% Mo (Hypereutectic) Alloys. 525-542A
Correction to "Effect of Undercooling on the Microstructure of Ni-35 At. Pct Mo (Eutectic) and Ni-38 At. Pct Mo (Hypereutectic Alloys". 1164-1165A

Eutectic temperature, Alloying effects
Correction to "Effect of Small Additions of Silver on the Eutectic Temperature in the Lead-Tin System". 478B

Eutectics
See also Directionally solidified eutectics

Eutectics, Alloying effects
The Effect of Strontium on the Electrical Resistivity and Conductivity of Aluminum—Silicon Alloys. 941-947A
The Mechanism of Silicon Modification in Aluminum—Silicon Alloys: Impurity Induced Twinning. 1721-1733A

Eutectics, Crystal growth
Interparticle Spacings and Undercoolings in Al—Si Eutectic Microstructures. 707-713A
Dendritic Growth of Undercooled Nickel—Tin. II. 925-932A
Growth of Interdendritic Eutectic in Directionally Solidified Al—Si Alloys. 1137-1142A

Eutectoid composition, Metal working
Austenitic Formation During Thermomechanical Treatment of Eutectoid Steel. 153-154A

Eutectoid decomposition
Coupled Temperature, Stress, Phase Transformation Calculation Model Numerical Illustration of the Internal Stresses Evolution During Cooling of a Eutectoid Carbon Steel Cylinder. 1203-1212A

Eutectoid reactions
See also Eutectoid decomposition
Partition of Manganese During the Growth of Proeutectoid Ferrite Allotriomorphs in an Fe—1.6 at.% C—2.8 at.% Mn Alloy. 1547-1557A

Eutectoids, Microstructure
Post-TMT Transformation Structure of Ferrite in Pearlite. 935-936A

Exchanging
See Cation exchanging
Ion exchanging

Extraction
See Solvent extraction

Extractive metallurgy
See also Hydrometallurgy
United States Extractive Metallurgy—the 1980s and Beyond. 289-313B

Extrusion casting
See Pressure casting

Extrusion compacting
See Compacting

Extrusions, Mechanical properties
Tensile Flow and Fracture Behavior of DO_3 and Fe—25 at.% Al and Fe—31 at.% Al Alloys. 283-291A
Microstructures and Properties of Rapidly Solidified Mg—10Al and Mg—12.5Al—1.5Si Alloys. 347-350A

Extrusions, Microstructure
Microstructural Characterization of a Rapidly Solidified Al—Mg—Mn Powder Alloy. 407-416A

Failure analysis
See Fractography

Fatigue (materials)
See Fatigue life
Fatigue limit
Fatigue strength
Low cycle fatigue

Fatigue failure
Effect of Hydrogen on Four-Point Bend Tests of U-Notched AISI 1090 Steel. 335-340A
The Influence of Crack Length on Fatigue Crack Growth in Deep Sharp Notches. 429-435A
Fatigue Crack Growth in MAR-M200 Single Crystals. 581-591A
Elevated-Temperature Fatigue Crack Growth Behavior of MAR-M200 Single Crystals. 593-602A
A Micromechanical Model for Cleavage-Crack Reinitiation. 1053-1059A
Combined Mode I—Mode III Fracture of a High Strength Low-Alloy Steel. 1061-1072A
Role of Third Order Statistics in Discriminating Among Models of Fatigue Crack Growth in Metals. 1855-1859A

Fatigue failure, Microstructural effects
Fatigue Behavior of Carburized Steel With Internal Oxides Near the Surface. 156-158A
Microstructural Effects and Crack Closure During Near Threshold Fatigue Crack Propagation in a High Strength Steel. 865-876A
Effects of Grain Size and Precipitate Size on the Fatigue Crack Growth Behavior of Alloy 718 at 427°C. 1431-1449A
The Effect of Microstructure on the Mode of Monotonic Fracture, Fatigue Crack Initiation, and Stage I Crack Growth in an Fe—21% Cr—11% Ni Heat Resisting Steel. 1951-1960A

Fatigue fracture
See Fatigue failure

Fatigue life, Microstructural effects
Fatigue Behavior of Carburized Steel With Internal Oxides Near the Surface. 156-158A

Fatigue limit, Alloying effects
Preparation, Mechanical Strengths, and Thermal Stability of Ni—Si—B and Ni—P—B Amorphous Wires. 621-628A

Fatigue limit, Microstructural effects
Role of Crack Tip Shielding in the Initiation and Growth of Long and Small Fatigue Cracks in Composite Microstructures. 1613-1629A

Fatigue strength
Effect of Isothermal Martensite on Properties of an AISI 52100 Ball Bearing Steel. 1531-1532A

Fatigue strength, Heating effects
Processing Properties Relationships of Ti—10V—2Fe—3Al. 2095-2103A

Fatigue strength, Microstructural effects
Role of Crack Tip Shielding in the Initiation and Growth of Long and Small Fatigue Cracks in Composite Microstructures. 1613-1629A

Ferric compounds
See Iron compounds

Ferrite
Partition of Manganese During the Growth of Proeutectoid Ferrite Allotriomorphs in an Fe—1.6 at.% C—2.8 at.% Mn Alloy. 1547-1557A

Ferrite, Crystal lattices
Ferrite and Carbide Morphologies In and Below the "Bay Region" of an Fe—0.19% C—2.30% Mo Alloy. 2047-2060A

Ferritic stainless steels, Corrosion
Effect of Grain Boundary Structure on Sensitization and Corrosion of Stainless Steel. 1117-1124A

Ferritic stainless steels, Mechanical properties
Comparison of Hydrogen Gas Embrittlement of Austenitic and Ferritic Stainless Steels. 123-134A

Ferroalloys
See Ferrosilicon

Ferrosilicon
Fundamental Studies on the Deoxidation of Low Carbon Steels With Ferrosilicon. 583-589B

Ferrous alloys
See also Alloy steels
Cast iron
Steels

Ferrous alloys, Corrosion
Oxidation of Fe—7Cr—12Ni—(0-6)Al—(0-7)Si Alloys. 1805-1812A

Ferrous alloys, Crystal growth
Liquid Separation Effects of Fe—Cu Alloys Solidified Under Different Cooling Rates. 565-575B

Ferrous alloys, Crystal lattices
Lattice Modulation and Formation of Lamellar Duplex Ferrite/Cubic Carbide Microstructure in Rapidly Solidified Fe—Ni—Al—C Alloys. 759-766A

Ferrous alloys, Mechanical properties
Tensile Flow and Fracture Behavior of DO_3 and Fe—25 at.% Al and Fe—31 at.% Al Alloys. 283-291A
Theory of Plastic and Viscous Deformation. 811-826A
The Effect of Hydrogen on Fracture Toughness of the Fe—Ni—Co Superalloy IN903. 1469-1482A

Ferrous alloys, Melting
Development of a New Method to Produce Melts Suitable for the Production of Amorphous Fe—Si—B Materials. 71-79B

Ferrous alloys, Microstructure
DO_3-B2-α Phase Relations in Fe—Al—Ti Alloys. 509-518A
The Two-Dimensional Connectivity of Liquid Phase Sintered Microstructures. 909-914A

Ferrous alloys, Reactions (chemical)
Equilibria of Nitride Forming Reactions in Liquid Iron Alloys. 195-202B

Ferrous alloys, Solubility
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
Effect of Titanium on the Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 231-235B

Ferrous alloys, Structural hardening
Ductile Two-Phase Alloys: Prediction of Strengthening at High Strains. 1249-1256A

Ferrous compounds
See Iron compounds

Ferrous metals
See Ferrous alloys

Fiber composites, Fabrication
The Squeeze Infiltration Process for Fabrication of Metal-Matrix Composites. 1519-1530A

Fiber composites, Mechanical properties
Analysis of the Creep Behavior of Silicon Carbide Whisker Reinforced 2124 Aluminum (T4). 109-114A
The Effect of Processing Parameters on the Tensile Properties of Alumina Fiber Reinforced Magnesium. 273-281A
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A
Ti—6Al—4V—2Ni as a Matrix Material for a SiC-Reinforced Composite. 2151-2156A

Fiber composites, Metal working
A Study of the Hot-Working Behavior of SiC—Al Alloy Composites and Their Matrix Alloys by Hot Torsion Testing. 303-312A

Fiber metallurgy
See Fiber composites
Mechanical alloying

Fibers
See Carbon fibers

Fields (physics)
See Electromagnetic fields

Films
See Magnetic films

Finite element method
Elastic—Plastic Analysis of Hardened Layers in Rims Subjected to Repeated Rolling Contacts. 827-833A

Finsider process
See Direct reduction

Flame reduction process
See Direct reduction

Flaw detection
See Ultrasonic testing

Floating zone melting
See Zone melting

Floating zone refining
See Zone melting

Flow
See Plastic flow
Turbulent flow

Flow stress
See Yield strength

Fluid flow
See Turbulent flow

Fluidity
See Viscosity

Fluidized beds
Modeling of Fixed Bed Heat Storage Units Utilizing Phase Change Materials. 339-346B

Fluxing
Activity of Silica in Calcium-Aluminate Based Slags. 746-748B

Forging
See Hot forging

Formability
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A
An Experimental Investigation of Deformation-Induced Heating During Tensile Testing. 1035-1042A

Formability, Deformation effects
Plane-Strain Work Hardening and Transient Behavior of Interstitial-Free Steel. 2129-2134A

Forming
See Cold rolling
Hot isostatic pressing
Hot rolling
Superplastic forming
Thermomechanical treatment

Fractography
The Effect of Processing Parameters on the Tensile Properties of Alumina Fiber Reinforced Magnesium. 273-281A
Tensile Flow and Fracture Behavior of DO_3 and Fe—25 at.% Al and Fe—31 at.% Al Alloys. 283-291A
The Role of Boron in Ductilizing Ni_3Al. 425-428A

Fracture mechanics
Fatigue Crack Growth in MAR-M200 Single Crystals. 581-591A
Elevated-Temperature Fatigue Crack Growth Behavior of MAR-M200 Single Crystals. 593-602A
A Micromechanical Model for Cleavage-Crack Reinitiation. 1053-1059A
Combined Mode I—Mode III Fracture of a High Strength Low-Alloy Steel. 1061-1072A
The Influence of Inclusion Spacing and Microstructure on the Fracture Toughness of the Secondary Hardening Steel AF1410. 1257-1263A
Experimental Study of the Mechanics of Fracture in WC—Co Alloys. 1299-1308A

Fracture strength
Weibull Statistical Fracture Theory for the Fracture of Ceramics. 1829-1834A

Fracture strength, Cooling effects
The Influence of Heat Treatment on the Structure and Properties of a Near-α Titanium Alloy. 877-891A

Fracture strength, Microstructural effects
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A
Granular Product in a High Strength, Low Alloy Containing Molybdenum and Niobium. 1923-1927A

Fracture testing
Thermal Stress Fracture of Refractory Lining Components. III. Analysis of Fracture. 371-380B

Fracture toughness
Structure—Property Correlation of Submerged-Arc and Gas-Metal-Arc Weldments in HY-100 Steel. 987-999A
The Effect of Hydrogen on Fracture Toughness of the Fe—Ni—Co Superalloy IN903. 1469-1482A
Rapidly Solidified P/M X2020 Aluminum Alloys. 2037-2046A
Fracture Characteristics of Al—4% Mg Mechanically Alloyed With SiC. 2115-2128A

Fracture toughness, Alloying effects
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Fracture toughness, Composition effects
The Relationship Between Toughness and Microstructure in Iron—High Manganese Binary Alloys. 1073-1081A

Fracture toughness, Diffusion effects
Site Competition Between Sulfur and Carbon at Grain Boundaries and Their Effects on the Grain Boundary Cohesion in Iron. 1109-1115A

Fracture toughness, Heating effects
Improved Lower Temperature Fracture Toughness of Ultrahigh Strength 4340 Steel Through Modified Heat Treatment. 1495-1501A
Interpretation of the Effects of High Austenitizing Temperature on Toughness Behavior in a Low Alloy, High Strength Steel. 1569-1585A
Fracture Behavior of Intercritically Treated Complex Structure in Medium-Carbon 6Ni Steel. 1587-1592A
A Fractographic Investigation of Thermal Embrittlement in Cast Duplex Stainless Steel. 1941-1949A
Processing Properties Relationships of Ti—10V—2Fe—3Al. 2095-2103A

Fracture toughness, Microstructural effects
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A
The Influence of Inclusion Spacing and Microstructure on the Fracture Toughness of the Secondary Hardening Steel AF1410. 1257-1263A

Fracturing
See Brittle fracture
Ductile fracture
Intergranular fracture

Free energy
See also Activation energy
A Thermodynamic Evaluation of the C—Fe—W System. 175-188A
Equilibria of Nitride Forming Reactions in Liquid Iron Alloys. 195-202B
Phase Rule and Independent Components. 327-333A
Phase Equilibrium in Two-Phase Coherent Solids. 1213-1228A
Thermodynamic Properties of Liquid Al—Mg Alloys Measured by the EMF Method. 1645-1651A

Free energy of activation
See Activation energy

Furnace liners
Velocity and Absorption Coefficient of Ultrasonic Waves in Molten and Glassy Silicates and Borates. 549-555B

Furnace liners, Thermal properties
Thermal Stress Fracture of Refractory Lining Components. I. Thermoelastic Analysis. 355-363B
Thermal Stress Fracture of Refractory Lining Components. II. Safe Heating and Cooling Rates. 365-370B
Thermal Stress Fracture of Refractory Lining Components. III. Analysis of Fracture. 371-380B

Furnaces
See Blast furnaces

Fused salt electrolysis
Melt/Freeze Heat Transfer Measurements in Cryolite-Based Electrolytes. 391-398B

Fused salts
Activities in the System LiF—NaF—AlF_3. 409-414B

Fusion welding
See Gas metal arc welding
Laser beam welding
Plasma arc welding
Submerged arc welding

Gadolinium, Alloying elements
Microstructural Observations and Thermal Stability of a Rapidly Solidified Aluminum—Gadolinium Alloy. 1533-1536A

Gadolinium, Binary systems
Study of the Enthalpies of Formation in the Gd—(Fe, Co, Pd, Pt) Systems. 903-907A

Galena, Reduction (chemical)
The Kinetics of Leaching Galena With Ferric Nitrate. 25-30B
The Effect of Chloride Ion on the Ferric Chloride Leaching of Galena Concentrate. 59-69B

Galvanic cells
See Electrolytic cells

Galvannealing
See Annealing

Gas metal arc welding
Structure—Property Correlation of Submerged-Arc and Gas-Metal-Arc Weldments in HY-100 Steel. 987-999A

Gas scrubbing
Desulfurization of CO:SO_2 Contaminated Gases by Manganous Oxide. 149-161B

Gas turbines
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. I. Diffusion Paths and Microstructures. 2061-2073A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. II. Diffusion Coefficients and Predicted Concentration Profiles. 2075-2086A
Predicting Diffusion Paths and Interface Motion in $\gamma/\gamma + \beta$, Ni—Cr—Al Diffusion Couples. 2087-2094A

Gasification
See Coal gasification

Germanium, Binary systems
Miscibility Gap Due to Ordering in the bcc Fe—Ge System. 949-955A

Gibbs free energy
See Free energy

Gibbs phase rule
See Phase rule

Glass
See Metallic glasses

Glass transition temperature
Preparation of Amorphous Ni—Pd—P Particles by Melt Ejection Into Stirred Water and Their Hardness and Thermal Stability. 377-383A
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sb Alloys. 1395-1401A

Gold, Binary systems
Calculating Activities From the Phase Diagram Involving an Intermediate Compound Using Its Entropy of Formation. 323-326A

Gold, Recovering
Synthesis of New Phosphonate Ester Resins for Adsorption of Gold From Alkaline Cyanide Solution. 625-633B
Studies on the Effect of Addition of Silver Ions on the Direct Oxidation of Pyrite. 641-647B

GP zone
See Guinier Preston zone

Gradients
See Temperature gradient

Grain boundaries
Carbonitride Precipitation in Niobium/Vanadium Microalloyed Steels. 211-222A
Grain Boundary Segregation of Phosphorus and Sulfur in Types 304L and 316L Stainless Steel and Its Effect on Intergranular Corrosion in the Huey Test. 691-699A
The Effect of Solution Heat-Treatment on Grain Boundary Segregation and Stress-Corrosion Cracking of Al—Zn—Mg Alloys. 1735-1744A

Grain boundaries, Alloying effects
The Distribution of Palladium in a Palladium-Modified 4130 Steel. 519-523A

Grain boundaries, Metallography
Nonequilibrium Solute Segregation to Austenite Grain Boundaries in Low Alloy Ferritic and Austenitic Steels. 399-406A

Grain boundary migration
A Surface Segregation Study in Phosphorus- and Sulfur-Doped Type 304 Stainless Steels. 19-26A
The Coherency Strain Effect on the Direction of Chemically Induced Liquid Film Migration in Mo—Ni Alloy. 151-153A

Grain growth
On the Contribution of Concurrent Grain Growth to Strain Sensitive Flow of a Superplastic Al—Cu Eutectic Alloy. 417-424A
A Model for High Temperature Ductility Losses in α—β Titanium Alloys. 483-485A
A Study of the Coarsening of Liquid—Solid Mixtures Using Synchrotron Radiation Microradiography. 487-490A
Abnormal Grain Growth Behavior of an Oxide Dispersion Strengthened Superalloy. 777-784A
The $\alpha \rightleftarrows \gamma$ Transformation Mechanisms in Iron Particles. 1151-1153A

Grain refinement
Microstructures and Properties of Rapidly Solidified Mg—10Al and Mg—12.5Al—1.5Si Alloys. 347-350A
The Role of Boron in the Grain Refinement of Aluminum With Titanium. 603-619A
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Grain size
Stochastic Modeling of the Independent Roles of Particle Size and Grain Size in Transgranular Cleavage Fracture. 641-651A
Grain Size and Hydrogen Concentration Effects on the Ductility Return in a Refractory Alloy. 857-863A
The Influence of Grain Size on the Erosion Rate of Metals. 1043-1052A
The $\alpha \rightleftarrows \gamma$ Transformation Mechanisms in Iron Particles. 1151-1153A
Effects of Grain Size and Precipitate Size on the Fatigue Crack Growth Behavior of Alloy 718 at 427°C. 1431-1449A

Grain structure
Microstructures and Superplastic Behavior of Eutectic Fe—C and Ni—Cr White Cast Irons Produced by Rapid Solidification. 1703-1711A

Grain structure, Alloying effects
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Graphite, Composite materials
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A

Graphite, Reactions (chemical)
Kinetics of Reduction of Ilmenite With Graphite at 1000 to 1100°C. 713-718B

Graphitic structure, Alloying effects
Content and Microdistribution of Spheroidizer in Various Phases of Cast Iron. 543-553A

Growth
See Grain growth

Guinier Preston zone
Some Remarks on the Hardness and Yield Strength of Aluminum Alloy 7075 as a Function of Retrogression Time. 350-353A

Hafnium, Alloying additive
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Hafnium compounds, Thermal properties
Standard Enthalpies of Formation of PdZr and PdHf. 1989-1994A

Halogenation
See Chlorination

Halogens
See Chlorine

Hard coating
See Hard surfacing

Hard facing
See Hard surfacing

Hard metals
See Cemented carbides

Hard surfacing
Microstructure and Wear Properties of Laser Clad Fe—Cr—Mn—C Alloys. 313-322A

Hardening
See Carburizing
Dispersion hardening
Hard surfacing
Laser beam hardening
Precipitation hardening
Solution strengthening
Strain hardening
Surface hardening

Hardmetals
See Cemented carbides

Hardness
See also Diamond pyramid hardness
Microhardness
Structure—Property Correlation of Submerged-Arc and Gas-Metal-Arc Weldments in HY-100 Steel. 987-999A

Hardness, Alloying effects
Microstructure—Composition Relationships and M_s Temperatures in Fe—Cr—Mn—N Alloys. 767-775A

Hazelett process
See Continuous casting

Heat affected zone, Corrosion
Hydrogen Attack Behavior of the Heat Affected Zone of a 2.25Cr—1Mo Steel Weldment. 1309-1312A
Low Temperature Sensitization of Type 304 Stainless Steel Pipe Weld Heat Affected Zone. 1483-1493A

Heat of decomposition
See Heat of formation

Heat of dissociation
See Heat of formation

Heat of formation
Gibbs Energies of Formation of Rare Earth Oxysulfides. 163-168B
Equilibria of Nitride Forming Reactions in Liquid Iron Alloys. 195-202B
Standard Enthalpies of Formation of PdZr and PdHf. 1989-1994A

Heat recovery
Modeling of Fixed Bed Heat Storage Units Utilizing Phase Change Materials. 339-346B

Heat recuperators
See Recuperators

Heat resistant alloys
See Superalloys

Heat storage
Modeling of Fixed Bed Heat Storage Units Utilizing Phase Change Materials. 339-346B

Heat transfer
The Interaction of a DC Transferred Arc With a Melting Metal: Experimental Measurements and Mathematical Description. 93-104B
Melt/Freeze Heat Transfer Measurements in Cryolite-Based Electrolytes. 391-398B

Heat treatment
See Annealing
Austempering
Austenitizing
Carburizing
Grain refinement
Precipitation hardening
Quenching and tempering
Solution heat treatment
Spheroidizing

Heating
See Electron beam heating

Heats (energies)
See Heat of formation

Heavy metals
See Antimony
Bismuth
Lead (metal)
Mercury (metal)
Tin

Helmholtz free energy
See Free energy

Hertz stresses
See Contact stresses

High alloy steels
See Austenitic stainless steels
Duplex stainless steels
Ferritic stainless steels
Maraging steels
Stainless steels

High energy milling
See Mechanical alloying

High speed tool steels, Chemical analysis
Microdistribution of Cerium in Steel. 499-507A

High strength low alloy steels, Chemical analysis
Microdistribution of Cerium in Steel. 499-507A

High strength low alloy steels, Crystal growth
Austenite Recrystallization in Nb/V Microalloyed Steels. 481-483A

High strength low alloy steels, Diffusion
Evaluation of Hydrogen-Trap Binding Enthalpy. I. 1559-1564A

High strength low alloy steels, Mechanical properties
Combined Mode I—Mode III Fracture of a High Strength Low-Alloy Steel. 1061-1072A
Brittle Fracture: Weakest Link or Process Zone Control?en 1861-1875A
The Relative Influence of Dynamic and Static Precipitation on the Hot Ductility of Microalloyed Steels. 1929-1939A
Combined Influence of Geometric Defects and Thermal Gradients on Tensile Ductility. 2143-2150A

High strength low alloy steels, Phases (state of matter)
Granular Product in a High Strength, Low Alloy Containing Molybdenum and Niobium. 1923-1927A

High strength low alloy steels, Structural hardening
Carbonitride Precipitation in Niobium/Vanadium Microalloyed Steels. 211-222A
Plane-Strain Work Hardening and Transient Behavior of Interstitial-Free Steel. 2129-2134A

High strength steels, Mechanical properties
Microstructural Effects and Crack Closure During Near Threshold Fatigue Crack Propagation in a High Strength Steel. 865-876A
A Micromechanical Model for Cleavage-Crack Reinitiation. *1053-1059A*

HIP
See Hot isostatic pressing

Historical metallurgy
The Greening of Materials Science and Engineering. 5-17B
The Greening of Materials Science and Engineering. 363-374A

Hot compacting
See Compacting

Hot deformation
See Deformation

Hot ductility
See Ductility

Hot forging
A Study of the Hot-Working Behavior of SiC—Al Alloy Composites and Their Matrix Alloys by Hot Torsion Testing. 303-312A

Hot hardness
See Hardness

Hot isostatic pressing, Size effects
Densification Mechanism Maps for Hot Isostatic Pressing (HIP) of Unequal Sized Particles. 97-107A

Hot pressing
See Hot isostatic pressing

Hot rolling
A Study of the Hot Working Behavior of Al—Mg Alloy 5052 by Hot Torsion Testing. 1603-1611A

Hot roughing
See Hot rolling

Hot strength
See Tensile strength

Hot tensile strength
See Tensile strength

Hot torsion tests
See Torsion tests

Hot workability, Microstructural effects
Identification of Dispersoids in Al—Mg Alloys Containing Manganese. 1353-1357A

Hot working
See Hot forging
Hot rolling

Hydrogen
See also Deuterium

Hydrogen, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Titanium Alloys. 249-254A
Correlation of Microstructural Parameters and Hydrogen Permeation in Carbon Steel. 717-721A
Effect of Hydrogen on Creep Behavior of Ti—6Al—4V Alloy at Room Temperature. 1125-1130A
Evaluation of Hydrogen-Trap Binding Enthalpy. I. 1559-1564A

Hydrogen, Reactions (chemical)
Hydrogen Attack Behavior of the Heat Affected Zone of a 2.25Cr—1Mo Steel Weldment. 1309-1312A

Hydrogen, Solubility
Physical Chemistry of Gas Liquid Solder Reactions. 577-582B

Hydrogen compounds
See Inorganic acids

Hydrogen embrittlement
Comparison of Hydrogen Gas Embrittlement of Austenitic and Ferritic Stainless Steels. 123-134A
Effect of Hydrogen on Four-Point Bend Tests of U-Notched AISI 1090 Steel. 335-340A
Grain Size and Hydrogen Concentration Effects on the Ductility Return in a Refractory Alloy. 857-863A
Hydrogen Attack Behavior of the Heat Affected Zone of a 2.25Cr—1Mo Steel Weldment. 1309-1312A
The Effect of Hydrogen on Mechanical Properties in Ti—10V—2Fe—3Al. 1421-1430A
The Effect of Hydrogen on Fracture Toughness of the Fe—Ni—Co Superalloy IN903. 1469-1482A
Evaluation of Hydrogen-Trap Binding Enthalpy. I. 1559-1564A
Effects of Grain-Boundary Segregation and Precipitation on the Hydrogen Susceptibility of Nickel. 1653-1662A
Effect of Heat Treatment on Delayed Hydride Cracking in Zr—2.5 wt.% Nb. 1687-1694A
Effect of Deoxidation Practice and Heat Treatment on the Hydrogen Attack of Carbon Steels. 1971-1977A

Hydrogen embrittlement, Coating effects
Retardation of Hydrogen Embrittlement of 17-4 PH Stainless Steels by Nonmetallic Surface Layers. 162-164A

Hydrogen embrittlement, Composition effects
Effects of Hydrogen on Low Temperature Hardening and Embrittlement of V—Cr Alloys. 1593-1601A

Hydrogen embrittlement, Corrosion effects
The Stress-Corrosion Cracking Behavior of High-Strength Aluminum Powder Metallurgy Alloys. 135-149A

Hydrogen embrittlement, Microstructural effects
Correlation of Microstructural Parameters and Hydrogen Permeation in Carbon Steel. 717-721A

Hydrogen reduction
Investigation of Iron Oxide Reduction by TEM. *257-278B*

Hydromagnetic stability
See Magnetohydrodynamics

Hydrometallurgy
The Measurement of the Diffusion Coefficient of Uranium(VI) in Aqueous Uranyl Sulfate Solutions. 19-23B
Calculation of Equilibrium Species for the Aqueous Solution Systems of UO_2SO_4—$U(SO_4)_2$—H_2SO_4—HF and UO_2Cl_2—UCl_4—HCl—HF at 298K. 49-57B
Correction to "Water and Solute Activities of H_2SO_4—$Fe_2(SO_4)_3$—H_2O and HCl—$FeCl_3$—H_2O Solution Systems: II. Activities of Solutes". 620B

Hypereutectic structures, Cooling effects
Effect of Undercooling on the Microstructure of Ni—35 at.% Mo (Eutectic) and Ni—38 at.% Mo (Hypereutectic) Alloys. 525-542A
Correction to "Effect of Undercooling on the Microstructure *of Ni-35 At. Pct Mo (Eutectic) and Ni-38 At. Pct Mo (Hypereutectic Alloys".* 1164-1165A

Hypoeutectic structures, Crystal growth
Dendritic Growth of Undercooled Nickel—Tin. II. 925-932A

Ignition
Ignition of Nickel in Environments Containing Oxygen and Chlorine. 1099-1107A

Ilmenite, Reduction (chemical)
Leaching Behavior of Ilmenite With Sulfuric Acid. 325-330B
Kinetics of Reduction of Ilmenite With Graphite at 1000 to 1100°C. 713-718B

Immersion testing (ultrasonic)
See Ultrasonic testing

Impact strength, Heating effects
Microstructure and Mechanical Properties of a 3Cr—1.5Mo *Steel.* 1279-1290A
Fracture Behavior of Intercritically Treated Complex Structure in Medium-Carbon 6Ni Steel. 1587-1592A

Impact strength, Impurity effects
The Effect of Low Melting Point Impurities on the Properties of Aluminum—Lithium Alloys. 2181-2193A

Impact toughness
See Impact strength

Impedance
See Electrical resistance

Impingement erosion
The Influence of Grain Size on the Erosion Rate of Metals. 1043-1052A

Inchromizing
See Chromizing

Inclusions
See also Nonmetallic inclusions
The Influence of Inclusion Spacing and Microstructure on the Fracture Toughness of the Secondary Hardening Steel *AF1410.* 1257-1263A

Inconel, Powder technology
Characterization of Inconel Alloy MA 6000 Powder. 747-752A

Indium, Binary systems
The Liquid Immiscibility and Associated Monotectic Reaction in Zn—In System. 1131-1136A

Infiltration
On the Infiltration of Metal Matrix Composites. 1160-1163A
The Squeeze Infiltration Process for Fabrication of Metal-Matrix Composites. 1519-1530A

Ingot casting
Mathematical Model of the Thermal Processing of Steel Ingots. I. Heat Flow Model. 119-130B
Mathematical Model of the Thermal Processing of Steel Ingots. *II. Stress Model.* 131-147B

Ingots, Heat treatment
Mathematical Model of the Thermal Processing of Steel Ingots. *I. Heat Flow Model.* 119-130B
Mathematical Model of the Thermal Processing of Steel Ingots. II. Stress Model. 131-147B

Initiation
See Crack initiation

Injection
Heat Transfer and Lance Clogging During Submerged Powder Injection. 105-117B

Inoculation
Content and Microdistribution of Spheroidizer in Various Phases of Cast Iron. 543-553A

Inorganic acids, Environment
The Mechanism of Intergranular Cracking of Ni—Cr—Fe Alloys in Sodium Tetrathionate. 1313-1323A

Integrated circuits, Fabrication
Low-Temperature Electrical Characteristics of the Au/Si Interface. 701-705A

Interdendritic structure
Growth of Interdendritic Eutectic in Directionally Solidified Al—Si Alloys. 1137-1142A

Interface reactions
Precipitate Shape Evolution Under Applied Stress—Thermodynamics and Kinetics. 233-247A
The Effect of Processing Parameters on the Tensile Properties of Alumina Fiber Reinforced Magnesium. 273-281A
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A

Interfaces
Low-Temperature Electrical Characteristics of the Au/Si Interface. 701-705A

Interfacial surface tension
See Surface tension

Intergranular corrosion, Diffusion effects
Grain Boundary Segregation of Phosphorus and Sulfur in Types 304L and 316L Stainless Steel and Its Effect on Intergranular Corrosion in the Huey Test. 691-699A

Intergranular corrosion, Microstructural effects
Effect of Grain Boundary Structure on Sensitization and Corrosion of Stainless Steel. 1117-1124A

Intergranular fracture
Grain Size and Hydrogen Concentration Effects on the Ductility Return in a Refractory Alloy. 857-863A
Microstructural Effects and Crack Closure During Near Threshold Fatigue Crack Propagation in a High Strength Steel. 865-876A
The Mechanism of Intergranular Cracking of Ni—Cr—Fe Alloys in Sodium Tetrathionate. 1313-1323A

Intergranular fracture, Alloying effects
Trace Element Effects on Ductility and Fracture of Ni—Cr—Ce Alloys. 1239-1248A
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Intergranular fracture, Composition effects
The Relationship Between Toughness and Microstructure in Iron—High Manganese Binary Alloys. 1073-1081A

Intermetallic compounds
See Intermetallics

Intermetallic phases
Study of the Enthalpies of Formation in the Gd—(Fe, Co, Pd, Pt) Systems. 903-907A
The Aging Behavior of Homogenized Type 308 and 308CRE Stainless Steel. 1195-1201A
Identification of Dispersoids in Al—Mg Alloys Containing Manganese. 1353-1357A
Effects of Grain Size and Precipitate Size on the Fatigue Crack Growth Behavior of Alloy 718 at 427°C. 1431-1449A

Intermetallic phases, Crystal growth
Coarsening of Dispersed Intermetallic Phases in Al—4.5Cu—2Mn Alloy. 1179-1190A
The Precipitation Sequence of Ni_3Ti in Cobalt-Free Maraging Steel. 1191-1194A
Phase Separation in a Ni—12.7 at.% Al Alloy at 550°C. 2027-2035A

Intermetallic phases, Deformation effects
Effect of Plastic Deformation on the Coarsening of Dispersoids in a Rapidly Solidified Al—Fe—Ce Alloy. 555-562A

Intermetallic phases, Heating effects
Thermal Stability of the Nickel-Base Superalloy B-1900 + Hafnium With Tantalum Variations. 1341-1351A
Microstructural Observations and Thermal Stability of a Rapidly Solidified Aluminum—Gadolinium Alloy. 1533-1538A

Intermetallics, Mechanical properties
The Role of Boron in Ductilizing Ni_3Al. 425-428A
Temperature and Composition Dependence of the Yield Stress of the Ag—Mg Intermetallic β' Phase. 1153-1154A
Microstructures and Mechanical Properties of Ni_3Al Alloyed *With Iron Additions.* 1265-1277A
Cryogenic Properties of a P/M Ni_3Al—B Alloy. 1819-1820A

Internal friction
See Snoek effect

Internal stress
See Residual stress

Interstitial defects
Internal Friction Study of Substitutional—Interstitial Interaction *in Niobium—Vanadium Alloys.* 1415-1420A

Ion exchange resins, Development
Synthesis of New Phosphonate Ester Resins for Adsorption *of Gold From Alkaline Cyanide Solution.* 625-633B

Ion exchanging
See also Cation exchanging
Synthesis of New Phosphonate Ester Resins for Adsorption of Gold From Alkaline Cyanide Solution. 625-633B

Iron
See also Alloy steels
Cast iron
White iron

Iron, Alloying elements
Microstructures and Mechanical Properties of Ni_3Al Alloyed With Iron Additions. 1265-1277A

Iron, Binary systems
Phase Transformations in the Zirconium-Rich Part of the Zr—Fe System Resulting From Heat Treatment and Plastic Deformation. 27-33A
Miscibility Gap Due to Ordering in the bcc Fe—Ge System. 949-955A
The Determination of the Titanium-Rich Liquidus and Solidus of the Ti—Fe System. 1679-1681A

Iron, Extraction
Correction to "Water and Solute Activities of H_2SO_4—$Fe_2(SO_4)_3$—H_2O and HCl—$FeCl_3$—H_2O Solution Systems: *II. Activities of Solutes*". 620B
Software for Computation of Aqueous Phase Species Distri*butions and Solvent Extraction With Liquid Cation Exchangers.* 743-746B

Iron, Mechanical properties
The Influence of Crack Length on Fatigue Crack Growth in Deep Sharp Notches. 429-435A
The Influence of Grain Size on the Erosion Rate of Metals. 1043-1052A
Site Competition Between Sulfur and Carbon at Grain Boundaries and Their Effects on the Grain Boundary Cohesion in *Iron.* 1109-1115A

Iron, Phase transformations
The $\alpha \rightleftarrows \gamma$ Transformation Mechanisms in Iron Particles. 1151-1153A

Iron, Physical properties
Interfacial Tension Between Low Pressure Argon Plasma and Molten Copper and Iron. 597-601B

Iron, Quaternary systems
An Experimental and Thermodynamic Study of the Fe—Cr—C—N System at 1273K. 1753-1766A

Iron, Quinary systems
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A

Iron, Reactions (chemical)
A Study of the Reaction of CO on Liquid Iron Alloys. 415-420B

Iron, Ternary systems
A Thermodynamic Evaluation of the C—Fe—W System. 175-188A
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) Liquid Alloys. 433-444B
Correction to "Phase Relationships in the Fe-Cr-C System at *Solidification Temperatures*". 478B
A Thermodynamic Analysis and Calculation of the Fe—Ni—Cr *Phase Diagram.* 733-745A
A Thermodynamic Analysis of the Fe—Cr—N System. 1745-1752A

Iron and steel making
See also Ironmaking
Steel making
Heat Transfer and Lance Clogging During Submerged Powder Injection. 105-117B
Desulfurization of CO:SO_2 Contaminated Gases by Manga*nous Oxide.* 149-161B
Equilibria of Nitride Forming Reactions in Liquid Iron Alloys. 195-202B
Investigation of Iron Oxide Reduction by TEM. 257-278B
Thermodynamics and Kinetics of Coal Gasification in a Liq*uid Iron Bath.* 347-354B

Iron base alloys
See Ferrous alloys

Iron compounds
See also Iron oxides
Pyrite

Iron compounds, Crystal growth
The Growth of Single Crystal Terfenol-D Crystals. 223-231A

Iron compounds, Crystal lattices
DO_3-B2-α Phase Relations in Fe—Al—Ti Alloys. 509-518A

Iron ores
See also Pyrite

Iron ores, Reduction (chemical)
Nonisothermal Flow of Gases Through Packed Beds. 279-280B

Iron oxides, Reduction (chemical)
Investigation of Iron Oxide Reduction by TEM. 257-278B

Iron powder
See Iron

Ironmaking
Correction to "Development of an Analytical Equation for *Calculation of the Blast Furnace Fuel Rate*". 478B

Isomer shift
See Mossbauer spectroscopy

Isostatic pressing
See Hot isostatic pressing

Isothermal treatment
See Austempering

Joints
See Welded joints

Junghans Rossi casting
See Continuous casting

Killed steels
See Aluminum killed steels

Kinetics
See also Reaction kinetics
A Surface Segregation Study in Phosphorus- and Sulfur-Doped Type 304 Stainless Steels. 19-28A
Dynamics of the Hot Metal Dephosphorization With Na_2O Slags. 687-693B
The Process of σ-Phase Solution in 25Cr—20Ni Austenitic Steels. 1171-1177A
Kinetics of Pearlite Spheroidization. 1359-1369A

Ladle metallurgy
Physical Modeling of Liquid/Liquid Mass Transfer in Gas Stirred Ladles. 381-390B
Measurement of Physical Characteristics of Bubbles in Gas—Liquid Plumes. II. *Local Properties of Turbulent Air—Water Plumes in Vertically Injected Jets.* 659-671B
Physical Modeling of Gas/Liquid Mass Transfer in a Gas Stirred Ladle. 673-680B

Lamellar structure
Lattice Modulation and Formation of Lamellar Duplex Ferrite/Cubic Carbide Microstructure in Rapidly Solidified Fe—Ni—Al—C Alloys. 759-766A
Mechanisms of Pearlite Spheroidization. 1403-1414A

Lanthanide metal compounds
See Dysprosium compounds
Terbium compounds

Lanthanide metals
See Cerium
Gadolinium

Laser beam hardening
Pulsed Laser Control of Surface Solidification. 354-357A

Laser beam welding
Microstructure and Wear Properties of Laser Clad Fe—Cr—Mn—C Alloys. 313-322A
Mechanism of Alloying Element Vaporization During Laser Welding. 733-740B

Laser processing
See Laser beam hardening
Laser beam welding

Laser welding
See Laser beam welding

Lattice constant
See Lattice parameters

Lattice defects
See Crystal defects

Lattice parameters
A Model for High Temperature Ductility Losses in α—β Titanium Alloys. 483-485A

Lattice parameters, Diffusion effects
Microhardness and Lattice Parameter Calibrations of the Oxygen Solid Solutions of Unalloyed α-Titanium and Ti—6Al—2Sn—4Zr—2Mo. 1503-1510A

Lattices
See Superlattices

Layers
See Surface layer

Leaching
See also Acid leaching
Ammonia pressure leaching
Sulfuric acid leaching
The Kinetics of Leaching Galena With Ferric Nitrate. 25-30B
The Leaching of Chalcopyrite With Cupric Chloride. 31-39B
The Effect of Chloride Ion on the Ferric Chloride Leaching of Galena Concentrate. 59-69B
The Leaching of Chalcopyrite With Ferric Sulfate. 489-496B
Mixed-Control Kinetics of Oxygen Leaching of Chalcopyrite and Pyrite From Porous Primary Ore Fragments. 497-503B
Leaching of $CuFeS_2$ by Aqueous $FeCl_3$, HCl, and NaCl: *Effects of Solution Composition and Limited Oxidant.* 505-510B
Studies on the Effect of Addition of Silver Ions on the Direct Oxidation of Pyrite. 641-647B

Lead (metal), Binary systems
A Thermodynamic Analysis of the Pb—S System and Calculation of the Pb—S Phase Diagram. 237-244B
Correction to "Effect of Small Additions of Silver on the Eutectic Temperature in the Lead-Tin System". 478B

Lead (metal), Extraction
The Kinetics of Leaching Galena With Ferric Nitrate. 25-30B
The Effect of Chloride Ion on the Ferric Chloride Leaching of Galena Concentrate. 59-69B

Lead (metal), Reactions (chemical)
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Effect of Oxygen, Nickel, and Cobalt. 203-212B
Activities of Arsenic, Antimony, Bismuth, and Lead in Copper Mattes—Impurity Elimination. 213-223B

Lead (metal), Ternary systems
Crystallization Studies in the Lead-Rich Corner of the System Pb—Mg—Bi. 169-180B

Lead base alloys, Crystal growth
Crystallization Studies in the Lead-Rich Corner of the System Pb—Mg—Bi. 169-180B
Permeability for Flow of Interdendritic Liquid in Columnar—Dendritic Alloys. 245-256B

Lead ores
See Galena

Leuders lines
See Luders lines

Life
See Fatigue life

Light metals
See Aluminum
Aluminum base alloys
Magnesium
Magnesium base alloys
Titanium
Titanium base alloys

Light water reactors
See Boiling water reactors

Line defects
See Dislocations

Liners
See Furnace liners

Liquid metals, Physical properties
Interfacial Tension Between Low Pressure Argon Plasma and Molten Copper and Iron. 597-601B
Surface Segregation and Surface Tension of Liquid Mixtures. 695-702B
Densities of Aluminum-Rich Aluminum—Copper Alloys During Solidification. 721-723A
Thermodynamic Properties of Liquid Al—Mg Alloys Measured by the EMF Method. 1645-1651A

Liquid metals, Reactions (chemical)
A Study of the Reaction of CO on Liquid Iron Alloys. 415-420B

Liquid phase diffusion
See Diffusion

Liquid phase sintering
Capillary Forces Between Spheres During Agglomeration and Liquid Phase Sintering. 11-17A
The Two-Dimensional Connectivity of Liquid Phase Sintered *Microstructures.* 909-914A

Liquidus
The Determination of the Titanium-Rich Liquidus and Solidus *of the Ti—Fe System.* 1679-1681A

Lithium, Alloying elements
Thermal Oxidation Behavior of an Al—Li—Cu—Mg—Zr Alloy. 681-689A
Mechanical Behavior of Aluminum—Lithium Alloys at Cryogenic Temperatures. 1695-1701A
Zirconium vs. Manganese—Chromium for Grain Structure *Control in an Al—Cu—Li Alloy.* 1820-1823A
Rapidly Solidified P/M X2020 Aluminum Alloys. 2037-2046A

Lithium, Diffusion
Interdiffusion in a Dilute Solid Solution of Al—Li Alloy Measured by Electrical Resistance. 1536-1538A

Lixiviation
See Leaching

Low alloy steels
See also Carbon manganese steels
Silicon steels

Low alloy steels, Phases (state of matter)
The Influence of Starting Microstructure on the Retention and *Mechanical Stability of Austenite in an Intercritically* Annealed—Low Alloy Dual-Phase Steel. 5-9A

Low cycle fatigue, Microstructural effects
The Effect of Phase Continuity on the Fatigue and Crack Closure Behavior of a Dual-Phase Steel. 1291-1298A

Luders bands
See Luders lines

Luders lines
Thermal and Strain Rate Softening in Al—Mg Sheet During Necking and Shear Band Formation. 1154-1156A

Macrofractography
See Fractography

Magnesium, Binary systems
Calculating Activities From the Phase Diagram Involving an *Intermediate Compound Using Its Entropy of Formation.* 323-326A
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sb Alloys. 1395-1401A
Thermodynamic Properties of Liquid Al—Mg Alloys *Measured by the EMF Method.* 1645-1651A

Magnesium, Composite materials
The Effect of Processing Parameters on the Tensile Properties of *Alumina Fiber Reinforced Magnesium.* 273-281A

Magnesium, Ternary systems
Crystallization Studies in the Lead-Rich Corner of the System *Pb—Mg—Bi.* 169-180B
Phase Rule and Independent Components. 327-333A

Magnesium base alloys, Composite materials
The Effect of Processing Parameters on the Tensile Properties of Alumina Fiber Reinforced Magnesium. 273-281A

Magnesium base alloys, Mechanical properties
*Microstructures and Properties of Rapidly Solidified Mg—*10Al and Mg—12.5Al—1.5Si Alloys. 347-350A
Temperature and Composition Dependence of the Yield *Stress of the Ag—Mg Intermetallic β' Phase.* 1153-1154A

Magnesium compounds, Mechanical properties
Temperature and Composition Dependence of the Yield *Stress of the Ag—Mg Intermetallic β' Phase.* 1153-1154A

Magnetic devices, Corrosion
Atmospheric Corrosion of Magnetic-Film Structures. 158-161A

Magnetic films, Corrosion
Atmospheric Corrosion of Magnetic-Film Structures. 158-161A

Magnetic flux welding
See Gas metal arc welding

Magnetic materials, Corrosion
Atmospheric Corrosion of Magnetic-Film Structures. 158-161A

Magnetic properties
See Curie temperature

Magnetoelastic effect
See Magnetostriction

Magnetohydrodynamic waves
See Magnetohydrodynamics

Magnetohydrodynamics
A Comprehensive Study of the Induced Current, the Electromagnetic *Force Field, and the Velocity Field in a Complex* Electromagnetically Driven Flow System. 529-538B

Magnetostriction
The Growth of *Single Crystal Terfenol-D Crystals.* 223-231A

Manganese, Alloying additive
The Effect of Chromium in High Carbon Bearing Steels. 1897-1906A

Manganese, Alloying elements
Effect of Manganese on the Recrystallization Texture of Phosphorus-Containing Low-Carbon Steel Sheet. 957-968A
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Manganese, Binary systems
Stable and Metastable Phase Equilibria *in the Al—Mn System.* 385-392A

Manganese, Diffusion
Partition of Manganese During the Growth of Proeutectoid Ferrite Allotriomorphs in an Fe—1.6 at.% C—2.8 at.% Mn Alloy. 1547-1557A

Manganese, Ternary systems
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A

Manganese steels, Mechanical properties
The Relationship Between Toughness and Microstructure in Iron—High Manganese Binary Alloys. 1073-1081A
The Effect of Aluminum on the Work Hardening and Wear Resistance of Hadfield Manganese Steel. 1629-1639A

Maraging steels, Structural hardening
The Precipitation Sequence of Ni_3Ti in Cobalt-Free Maraging Steel. 1191-1194A

Martensite
The *Clustering and Coarsening of Carbon Multiplets During* the Aging of Martensite From Mössbauer Spectroscopy: the Preprecipitation Stage of Epsilon Carbide. 1371-1388A

Martensitic transformations
The Influence of Starting Microstructure on the Retention and Mechanical Stability of Austenite in an Intercritically *Annealed—Low Alloy Dual-Phase Steel.* 5-9A
Phase Transformations in Ti_2Ni_3 Precipitates Formed in Aged Ti—52 at.% Ni. 785-799A
The $\alpha \rightleftarrows \gamma$ Transformation Mechanisms in Iron Particles. 1151-1153A
Isothermal Martensite Formation in an AISI 52100 Ball Bearing Steel. 1389-1394A
The Effect of Hydrogen on Mechanical Properties in Ti—10V—2Fe—3Al. 1421-1430A
Transformation-Toughening in Cemented Carbides. I. Binder Composition Control. 2163-2173A
Transformation-Toughening in Cemented Carbides. II. Thermomechanical Treatments. 2175-2180A

Martensitic transformations, Deformation effects
Phase Transformations in the Zirconium-Rich Part of the Zr—Fe System Resulting From Heat Treatment and Plastic Deformation. 27-33A
Microstructure—Composition Relationships and M_s Temperatures in Fe—Cr—Mn—N Alloys. 767-775A
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A

Martensitic transformations, Pressure effects
Strain Induced Martensite Formation in Stainless Steel. 201-210A

Mass transfer
Physical Modeling of Liquid/Liquid Mass Transfer in Gas *Stirred Ladles.* 381-390B
Physical Modeling of Gas/Liquid Mass Transfer in a Gas Stirred Ladle. 673-680B
Mechanism of Alloying Element Vaporization During Laser *Welding.* 733-740B

Master alloys
The Role of Boron in the Grain Refinement of Aluminum With *Titanium.* 603-619A

Materials substitution
The Greening of Materials Science and Engineering. 5-17B
The Greening of Materials Science and Engineering. 363-374A

Materials testing
See Microanalysis
Ultrasonic testing

Mathematical analysis
Discussion of "Legendre Polynomial Expansions of Thermodynamic *Properties of Binary Solutions" and Author's* Reply. 354A
Correction to "Development of an Analytical Equation for *Calculation of the Blast Furnace Fuel Rate".* 478B
Analytical Expressions for the Activity of the Solute in Binary Dilute Solutions in Terms of Associated Solution Model Parameters. 1641-1644A

Mathematical models
The Effect of Tundish Wall Inclination on the Fluid Flow and Mixing: a Modeling Study. 81-92B
Densification Mechanism Maps for Hot Isostatic Pressing (HIP) of Unequal Sized Particles. 97-107A
Mathematical Model of the Thermal Processing of Steel Ingots. I. Heat Flow Model. 119-130B
Mathematical Model of the Thermal Processing of Steel Ingots. II. Stress Model. 131-147B
A Comprehensive Study of the Induced Current, the Electro*magnetic Force Field, and the Velocity Field in a Complex* Electromagnetically Driven Flow System. 529-538B
Electromagnetic and Fluid Flow Phenomena in a Mercury *Model System of the Electromagnetic Casting of Aluminum.* 539-548B
The Evolution of Macrosegregation in Statically Cast Binary Ingots. 611-616B
Surface Segregation and Surface Tension of Liquid Mixtures. 695-702B
A Practical Solution for the Diffusion Equations in Binary and Multicomponent Systems With Constant Intrinsic Diffusion Coefficients. 801-809A
Grain Size and Hydrogen Concentration Effects on the Ductility Return in a Refractory Alloy. 857-863A
Ductile Two-Phase Alloys: Prediction of Strengthening at High Strains. 1249-1256A
Role of Third Order Statistics in Discriminating Among Models of Fatigue Crack Growth in Metals. 1855-1859A

Mathematics
See Finite element method
Mathematical analysis
Mathematical models

Mattes
See Copper mattes

Mechanical alloying
Characterization of Inconel Alloy MA 6000 Powder. 747-752A

Mechanical disintegration
See Comminution

Mechanical engineering
The Greening of Materials Science and Engineering. 5-17B
The Greening of Materials Science and Engineering. 363-374A

Mechanical properties
See Bursting strength
Compressive strength
Contact stresses
Creep (materials)
Creep life
Creep rate
Creep rupture strength
Creep strength
Diamond pyramid hardness
Ductile brittle transition
Ductility
Elongation
Fatigue life
Fatigue limit
Fatigue strength
Fracture strength
Fracture toughness
Hardness
Hydrogen embrittlement
Impact strength
Microhardness
Notch sensitivity

Notch toughness
Plastic flow
Plasticity
Residual stress
Superplasticity
Tensile properties
Tensile strength
Viscoplasticity
Wear resistance
Yield strength

Mechanical tests
See Fracture testing
Tension tests
Torsion tests

Mechanics
See Fracture mechanics
Kinetics

Melt spinning
A Fluid Mechanics Model of the Planar Flow Melt Spinning Process Under Low Reynolds Number Conditions. 557-583B
Cellular Microstructure of Chill Block Melt Spun Ni—Mo Alloys. *1663-1678A*

Melting
See Plasma arc melting
Zone melting

Mercury (metal), Melting
A Comprehensive Study of the Induced Current, the Electromagnetic Force Field, and the Velocity Field in a Complex Electromagnetically Driven Flow System. 529-538B

Metal carbides
See Tungsten carbide

Metal powders
See also Alloy powders

Metal powders, Microstructure
Microstructural Characterization of a Rapidly Solidified Al—Mg—Mn Powder Alloy. 407-416A

Metal powders, Phases (state of matter)
The Undercooling of Aluminum. 1143-1150A

Metal powders, Reactions (chemical)
A Diffusion Model for Tungsten Powder Carburization. 969-974A

Metal working
See Cold rolling
Hot rolling
Superplastic forming
Thermomechanical treatment

Metallic glasses
A Theoretical Evaluation of Chemical Ordering and Glass Transition in Liquid Mg—Sb Alloys. 1395-1401A

Metallic glasses, Alloy development
Amorphous Fe—C—Si Alloys Prepared by Melt Quenching. 715-717A

Metallic glasses, Crystal lattices
Lattice Modulation and Formation of Lamellar Duplex Ferrite/Cubic Carbide Microstructure in Rapidly Solidified Fe—Ni—Al—C Alloys. 759-766A

Metallic glasses, Mechanical properties
Preparation, Mechanical Strengths, and Thermal Stability of Ni—Si—B and Ni—P—B Amorphous Wires. 621-628A

Metallic glasses, Phase transformations
Stable and Metastable Phase Equilibria in the Al—Mn System. 385-392A

Metallic glasses, Powder technology
Preparation of Amorphous Ni—Pd—P Particles by Melt Ejection Into Stirred Water and Their Hardness and Thermal Stability. 377-383A

Metallic glasses, Synthesis
Development of a New Method to Produce Melts Suitable for the Production of Amorphous Fe—Si—B Materials. 71-79B

Metallographic structures
See Microstructure

Metalloid compounds
See Silicon carbide
Silicon dioxide

Metalloids
See Arsenic
Boron
Silicon

Metallurgical constituents
See Sigma phase

Metastable phases
Microstructural Characterization of a Rapidly Solidified Al—Mg—Mn Powder Alloy. 407-416A
Phase Equilibrium in Two-Phase Coherent Solids. 1213-1228A
Microstructural Characterization of Rapidly Solidified Al—Ta Alloys. 1915-1922A

Metastable phases, Cooling effects
The Undercooling of Aluminum. 1143-1150A

Metastable phases, Heating effects
Microstructural Observations and Thermal Stability of a Rapidly Solidified Aluminum—Gadolinium Alloy. 1533-1536A

MHD
See Magnetohydrodynamics

Microalloyed steels
See High strength low alloy steels

Microanalysis
Microdistribution of Cerium in Steel. 499-507A

Microcracking
See Crack initiation

Microfractography
See Fractography

Microhardness, Diffusion effects
Microhardness and Lattice Parameter Calibrations of the Oxygen Solid Solutions of Unalloyed α-Titanium and Ti—6Al—2Sn—4Zr—2Mo. 1503-1510A

Microscopy
See Transmission electron microscopy

Microshrinkage
See Shrinkage

Microstructure
See also Graphitic structure
Lamellar structure

Microstructure, Cooling effects
Liquid Separation Effects of Fe—Cu Alloys Solidified Under Different Cooling Rates. 565-575B
The Influence of Heat Treatment on the Structure and Properties of a Near-α Titanium Alloy. 877-891A

Mig arc welding
See Gas metal arc welding

Mill scale
See Scale (corrosion)

Milling (comminution)
See Comminution

Mineral acids
See Inorganic acids

Miscibility
Miscibility Gap Due to Ordering in the bcc Fe—Ge System. 949-955A
The Liquid Immiscibility and Associated Monotectic Reaction in Zn—In System. 1131-1136A

Mixing
See Mechanical alloying

Mobility
See Dislocation mobility

Modification
Content and Microdistribution of Spheroidizer in Various Phases of Cast Iron. 543-553A
Interparticle Spacings and Undercoolings in Al—Si Eutectic Microstructures. 707-713A
The Mechanism of Silicon Modification in Aluminum—Silicon Alloys: Impurity Induced Twinning. *1721-1733A*

Molten metals
See Liquid metals

Molten salts
See Fused salts

Molybdenum, Alloying additive
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A
The Effect of Chromium in High Carbon Bearing Steels. 1897-1906A

Molybdenum, Extraction
Chlorination of Commercial Molybdenite Concentrate in a Fluidized Bed Reactor. 445-449B

Molybdenum base alloys, Diffusion
The Coherency Strain Effect on the Direction of Chemically Induced Liquid Film Migration in Mo—Ni Alloy. 151-153A

Molybdenum chromium nickel steels
See Nickel chromium molybdenum steels

Molybdenum chromium steels
See Chromium molybdenum steels

Molybdenum nickel chromium steels
See Nickel chromium molybdenum steels

Molybdenum ores, Reactions (chemical)
Chlorination of Commercial Molybdenite Concentrate in a Fluidized Bed Reactor. 445-449B

Molybdenum steels
See also Chromium molybdenum steels
Nickel chromium molybdenum steels

Molybdenum steels, Phases (state of matter)
Ferrite and Carbide Morphologies In and Below the "Bay Region" of an Fe—0.19% C—2.30% Mo Alloy. *2047-2060A*

Monocrystals
See Single crystals

Monotectic reactions
The Liquid Immiscibility and Associated Monotectic Reaction in Zn—In System. 1131-1136A

Mossbauer spectroscopy
Strain Induced Martensite Formation in Stainless Steel. 201-210A

Necking
Thermal and Strain Rate Softening in Al—Mg Sheet During Necking and Shear Band Formation. 1154-1156A

Nickel, Alloying elements
The Coherency Strain Effect on the Direction of Chemically Induced Liquid Film Migration in Mo—Ni Alloy. 151-153A

Phase Transformations in Ti_2Ni_3 Precipitates Formed in Aged Ti—52 at.% Ni. 785-799A

Nickel, Coating
CVD Chromized Nickel. 617-619B

Nickel, Corrosion
Mechanisms in the Simultaneous Erosion—Oxidation Attack of Nickel and Cobalt at High Temperature. 1785-1803A

Nickel, Diffusion
The Diffusion and Solubility of Oxygen in Solid Nickel. 43-50A

Nickel, Extraction
Chemical Equilibrium Studies on the Nickel Sulfate—Acetate Buffer/β-Alkyl-8-Hydroxy—Quinoline—Xylene System. 399-407B
The Leaching Kinetics of Cobalt and Nickel From Aluminum-Coprecipitated Products. 635-640B

Nickel, Mechanical properties
A Model for the Oxide Growth Stress and Its Effect on the Creep of Metals. 975-986A
Effects of Grain-Boundary Segregation and Precipitation on the Hydrogen Susceptibility of Nickel. 1653-1662A

Nickel, Oxidation
Ignition of Nickel in Environments Containing Oxygen and Chlorine. 1099-1107A

Nickel, Quinary systems
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A

Nickel, Ternary systems
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
A Thermodynamic Analysis and Calculation of the Fe—Ni—Cr Phase Diagram. 733-745A
A Practical Solution for the Diffusion Equations in Binary and Multicomponent Systems With Constant Intrinsic Diffusion Coefficients. 801-809A
Predicting the Occurrence of Zero Flux Planes. 1565-1568A

Nickel base alloys
See also Inconel
Nickel chromium alloys

Nickel base alloys, Alloy development
Effects of Boron, Carbon, and Zirconium on the Structure and Properties of a P/M Nickel Base Superalloy. 69-77A

Nickel base alloys, Corrosion
The Mechanism of Intergranular Cracking of Ni—Cr—Fe Alloys in Sodium Tetrathionate. 1313-1323A

Nickel base alloys, Crystal growth
Abnormal Grain Growth Behavior of an Oxide Dispersion Strengthened Superalloy. 777-784A
Dendritic Growth of Undercooled Nickel—Tin. I. 915-924A
Dendritic Growth of Undercooled Nickel—Tin. II. 925-932A

Nickel base alloys, Diffusion
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. I. Diffusion Paths and Microstructures. 2061-2073A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. II. Diffusion Coefficients and Predicted Concentration Profiles. 2075-2086A
Predicting Diffusion Paths and Interface Motion in $\gamma/\gamma + \beta$, Ni—Cr—Al Diffusion Couples. 2087-2094A

Nickel base alloys, Mechanical properties
Yielding and Deformation Behavior of the Single Crystal Superalloy PWA 1480. 85-95A
Fatigue Crack Growth in MAR-M200 Single Crystals. 581-591A
Elevated-Temperature Fatigue Crack Growth Behavior of MAR-M200 Single Crystals. 593-602A
Preparation, Mechanical Strengths, and Thermal Stability of Ni—Si—B and Ni—P—B Amorphous Wires. 621-628A
The Effect of the Lower Stress Level on the Cyclic Creep Behavior of an ODS Superalloy. 1029-1033A
Effects of Grain Size and Precipitate Size on the Fatigue Crack Growth Behavior of Alloy 718 at 427°C. 1431-1449A
Stochastic Processes in Creep Cavitation. 1835-1842A
Effect of Initial Gamma Prime Size on the Elevated Temperature Creep Properties of Single Crystal Nickel Base Superalloys. 1961-1970A
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Nickel base alloys, Microstructure
Cellular Microstructure of Chill Block Melt Spun Ni—Mo Alloys. 1663-1678A

Nickel base alloys, Oxidation
Adherent Al_2O_3 Scales Formed on Undoped NiCrAl Alloys. 164-167A

Nickel base alloys, Phases (state of matter)
Effect of Undercooling on the Microstructure of Ni—35 at.% Mo (Eutectic) and Ni—38 at.% Mo (Hypereutectic) Alloys. 525-542A
Correction to "Effect of Undercooling on the Microstructure of Ni-35 At. Pct Mo (Eutectic) and Ni-38 At. Pct Mo (Hypereutectic Alloys". 1164-1165A

Nickel base alloys, Powder technology
Preparation of Amorphous Ni—Pd—P Particles by Melt Ejection Into Stirred Water and Their Hardness and Thermal Stability. 377-383A

Nickel base alloys, Structural hardening
Thermal Stability of the Nickel-Base Superalloy B-1900 + Hafnium With Tantalum Variations. 1341-1351A
Phase Separation in a Ni—12.7 at.% Al Alloy at 550°C. 2027-2035A
Cyclic Hardening Mechanisms in Nimonic 80A. 2135-2141A

Nickel chromium alloys, Mechanical properties
Trace Element Effects on Ductility and Fracture of Ni—Cr—Ce Alloys. 1239-1248A

Nickel chromium molybdenum steels, Corrosion
Microstructural Effects on the Stress Corrosion Cracking Behavior of Medium and High Strength Steels. 1011-1022A
The Role of Retained Austenite in Stress Corrosion Cracking of Steels. 1023-1028A

Nickel chromium molybdenum steels, Heat treatment
Improved Lower Temperature Fracture Toughness of Ultrahigh Strength 4340 Steel Through Modified Heat Treatment. 1495-1501A

Nickel chromium molybdenum steels, Mechanical properties
Fatigue Behavior of Carburized Steel With Internal Oxides Near the Surface. 156-158A

Nickel chromium molybdenum steels, Microstructure
Effect of Quench Rate on Microstructure and Tensile Properties of AISI 4320 and 4340 Steels. 115-121A

Nickel chromium molybdenum steels, Welding
Structure—Property Correlation of Submerged-Arc and Gas-Metal-Arc Weldments in HY-100 Steel. 987-999A

Nickel chromium steels
See also Nickel chromium molybdenum steels

Nickel chromium steels, Mechanical properties
Interpretation of the Effects of High Austenitizing Temperature on Toughness Behavior in a Low Alloy, High Strength Steel. 1569-1585A

Nickel compounds, Mechanical properties
The Role of Boron in Ductilizing Ni_3Al. 425-428A
Microstructures and Mechanical Properties of Ni_3Al Alloyed With Iron Additions. 1265-1277A
Cryogenic Properties of a P/M Ni_3Al—B Alloy. 1819-1820A
Discussion of "The Role of Boron in Ductilizing Ni_3Al". 1995-1996A
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Nickel molybdenum chromium steels
See Nickel chromium molybdenum steels

Nickel molybdenum steels
See Nickel chromium molybdenum steels

Nickel steels
See also Nickel chromium molybdenum steels
Nickel chromium steels

Nickel steels, Mechanical properties
Fracture Behavior of Intercritically Treated Complex Structure in Medium-Carbon 6Ni Steel. 1587-1592A

Nickel steels, Phase transformations
Partition of Manganese During the Growth of Proeutectoid Ferrite Allotriomorphs in an Fe—1.6 at.% C—2.8 at.% Mn Alloy. 1547-1557A

Niobium base alloys, Diffusion
Internal Friction Study of Substitutional—Interstitial Interaction in Niobium—Vanadium Alloys. 1415-1420A

Niobium base alloys, Mechanical properties
Grain Size and Hydrogen Concentration Effects on the Ductility Return in a Refractory Alloy. 857-863A

Nitrides, Thermal properties
Equilibria of Nitride Forming Reactions in Liquid Iron Alloys. 195-202B

Nitrogen, Quaternary systems
An Experimental and Thermodynamic Study of the Fe—Cr—C—N System at 1273K. 1753-1766A

Nitrogen, Quinary systems
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A

Nitrogen, Reactions (chemical)
Equilibria of Nitride Forming Reactions in Liquid Iron Alloys. 195-202B

Nitrogen, Solubility
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
Effect of Titanium on the Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 231-235B
Physical Chemistry of Gas Liquid Solder Reactions. 577-582B

Nitrogen, Ternary systems
A Thermodynamic Analysis of the Fe—Cr—N System. 1745-1752A

Nitrogen compounds
See Carbonitrides
Nitrides

Nondestructive testing
See Ultrasonic testing

Nonferrous smelting
See Smelting

Nonmetallic inclusions
Velocity and Absorption Coefficient of Ultrasonic Waves in Molten and Glassy Silicates and Borates. 549-555B
Equilibrium Between Sulfur and Titanium in Liquid Iron. 681-685B

Notch ductility
See Ductility

Notch effect
See Notch sensitivity

Notch impact strength
See Impact strength

Notch sensitivity
The Influence of Crack Length on Fatigue Crack Growth in Deep Sharp Notches. 429-435A

Notch toughness, Heating effects
Interpretation of the Effects of High Austenitizing Temperature on Toughness Behavior in a Low Alloy, High Strength Steel. 1569-1585A

Notch toughness, Microstructural effects
Stochastic Modeling of the Independent Roles of Particle Size and Grain Size in *Transgranular Cleavage Fracture*. 641-651A

Notched bar tensile test
See Tension tests

Nuclear reactor components, Corrosion
Low Temperature Sensitization of Type 304 Stainless Steel Pipe Weld Heat Affected Zone. 1483-1493A

Nuclear reactors
See Boiling water reactors

Ores
See Chalcopyrite
Galena
Ilmenite
Iron ores
Molybdenum ores
Pyrite
Sphalerite
Tungsten ores

Orientation
See Orientation relationships

Orientation relationships
The Representation of Orientation Distributions. 1083-1092A
Orientation Relationships in Graphitic Cast Irons. 1907-1913A

Oxidants
See Oxidizing agents

Oxidation
A Model for the Oxide Growth Stress and Its Effect on the Creep of Metals. 975-986A
Mechanisms in the Simultaneous Erosion—Oxidation Attack of Nickel and Cobalt at High Temperature. 1785-1803A

Oxidation rate
The High Temperature Oxidation of Al—4.2Mg Alloy. 463-472A

Oxidation rate, Environmental effects
Ignition of Nickel in Environments Containing Oxygen and Chlorine. 1099-1107A

Oxidation resistance, Alloying effects
Oxidation of Fe—7Cr—12Ni—(0-6)Al—(0-7)Si Alloys. 1805-1812A

Oxide coatings
Retardation of Hydrogen Embrittlement of 17-4 PH Stainless Steels by Nonmetallic Surface Layers. 162-164A
A Model for the Oxide Growth Stress and Its Effect on the Creep of Metals. 975-986A

Oxide coatings, Chemical analysis
Thermal Oxidation Behavior of an Al—Li—Cu—Mg—Zr Alloy. 681-689A

Oxide coatings, Microstructure
The High Temperature Oxidation of Al—4.2Mg Alloy. 463-472A

Oxide films
See Oxide coatings

Oxides
See Aluminum oxide
Carbon monoxide
Iron oxides
Silicon dioxide

Oxidizers
See Oxidizing agents

Oxidizing
See Oxidation

Oxidizing agents
The Kinetics of Leaching Galena With Ferric Nitrate. 25-30B

Oxygen, Diffusion
The Diffusion and Solubility of Oxygen in Solid Nickel. 43-50A
Internal Friction Study of Substitutional—Interstitial Interaction in Niobium—Vanadium Alloys. 1415-1420A
Microhardness and Lattice Parameter Calibrations of the Oxygen Solid Solutions of Unalloyed α-Titanium and Ti—6Al—2Sn—4Zr—2Mo. 1503-1510A

Oxygen, Solubility
The Coordination Cluster Theory: Extension to Multicomponent Systems. 1779-1783A

Oxygen, Ternary systems
Phase Rule and Independent Components. 327-333A
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) Liquid Alloys. 433-444B
Discussion of "Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon" and Authors' Reply. 471-477B

Packing (crystal density)
See Crystal structure

Palladium, Alloying additive
The Distribution of Palladium in a Palladium-Modified 4130 Steel. 519-523A

Palladium compounds, Thermal properties
Standard Enthalpies of Formation of PdZr and PdHf. 1989-1994A

Parameters
See Lattice parameters

Particle shape
Equilibrium Between Sulfur and Titanium in Liquid Iron. 681-685B

Particle size
Densification Mechanism Maps for Hot Isostatic Pressing (HIP) of Unequal Sized Particles. 97-107A
Stochastic Modeling of the Independent Roles of Particle Size and Grain Size in Transgranular Cleavage Fracture. 641-651A

Particle size, Deformation effects
Effect of Plastic Deformation on the Coarsening of Dispersoids in a Rapidly Solidified Al—Fe—Ce Alloy. 555-562A

Particle size reduction
See Comminution

Pearlite
Kinetics of Pearlite Spheroidization. 1359-1369A
Mechanisms of Pearlite Spheroidization. 1403-1414A

Peritectic reactions
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A

Phase decomposition
See also Eutectoid decomposition
The Process of σ-Phase Solution in 25Cr—20Ni Austenitic Steels. 1171-1177A
The Precipitation Sequence of Ni_3Ti in Cobalt-Free Maraging Steel. 1191-1194A
Thermal Stability of the Nickel-Base Superalloy B-1900 + Hafnium With Tantalum Variations. 1341-1351A
Phase Separation in a Ni—12.7 at.% Al Alloy at 550°C. 2027-2035A

Phase diagram reactions
See also Austenitizing
Eutectic reactions
Eutectoid decomposition
Eutectoid reactions
Martensitic transformations
Monotectic reactions
Peritectic reactions
Phase decomposition
Phase Rule and Independent Components. 327-333A

Phase diagrams
Crystallization Studies in the Lead-Rich Corner of the System Pb—Mg—Bi. 169-180B
A Thermodynamic Evaluation of the C—Fe—W System. 175-188A
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
A Thermodynamic Analysis of the Pb—S System and Calculation of the Pb—S Phase Diagram. 237-244B
Calculating Activities From the Phase Diagram Involving an Intermediate Compound Using Its Entropy of Formation. 323-326A
Stable and Metastable Phase Equilibria in the Al—Mn System. 385-392A
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) Liquid Alloys. 433-444B
Discussion of "Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon" and Authors' Reply. 471-477B
Correction to "Phase Relationships in the Fe-Cr-C System at Solidification Temperatures". 478B
A Thermodynamic Analysis and Calculation of the Fe—Ni—Cr Phase Diagram. 733-745A
Miscibility Gap Due to Ordering in the bcc Fe—Ge System. 949-955A
The Liquid immiscibility and Associated Monotectic Reaction in Zn—In System. 1131-1136A
An Experimental and Thermodynamic Study of the Fe—Cr—C—N System at 1273K. 1753-1766A
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A

Phase ratio
The Effect of Phase Continuity on the Fatigue and Crack Closure Behavior of a Dual-Phase Steel. 1291-1298A

Phase rule
On the Inapplicability of Gibbs Phase Rule to Coherent Solids. 1093-1097A

Phase stability
Correlation of Tensile Properties, Deformation Modes, and Phase Stability in Commercial β-Phase Titanium Alloys. 265-271A
Phase Equilibrium in Two-Phase Coherent Solids. 1213-1228A
Thermal Stability of the Nickel-Base Superalloy B-1900 + Hafnium With Tantalum Variations. 1341-1351A
Microstructural Observations and Thermal Stability of a Rapidly Solidified Aluminum—Gadolinium Alloy. 1533-1536A

Phase stability, Alloying effects
Preparation, Mechanical Strengths, and Thermal Stability of Ni—Si—B and Ni—P—B Amorphous Wires. 621-628A

Phase stability, Heating effects
The Influence of Starting Microstructure on the Retention and Mechanical Stability of Austenite in an Intercritically Annealed—Low Alloy Dual-Phase Steel. 5-9A

Phase structure
See Solid phases

Phase transformations
See also Allotropic transformation
Austenitizing
Martensitic transformations
A Model for High Temperature Ductility Losses in α—β Titanium Alloys. 483-485A

Phase transformations, Stress effects
Precipitate Shape Evolution Under Applied Stress—Thermodynamics and Kinetics. 233-247A

Phases (state of matter)
See also Intermetallic phases
Metastable phases
Sigma phase
Solid phases
Carbonitride Precipitation in Niobium/Vanadium Microalloyed Steels. 211-222A

Phases (state of matter), Alloying effects
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A
The Effect of Chromium in High Carbon Bearing Steels. 1897-1906A

Phosphorus, Alloying elements
A Surface Segregation Study in Phosphorus- and Sulfur-Doped Type 304 Stainless Steels. 19-26A

Phosphorus, Diffusion
Grain Boundary Segregation of Phosphorus and Sulfur in Types 304L and 316L Stainless Steel and Its Effect on Intergranular Corrosion in the Huey Test. 691-699A

Photo oxidation
See Oxidation

Physical chemistry
Thermodynamics and Kinetics of Coal Gasification in a Liquid Iron Bath. 347-354B

Physical properties
See Cryogenic properties
Curie temperature
Density
Diffusivity
Heat of formation
Miscibility
Porosity
Resistivity
Solubility
Superconductivity
Surface tension
Texture
Thermal stability
Viscosity
Wettability

Piezoresistance
See Electrical resistance

Plasma arc heating
See Plasma arc melting

Plasma arc melting
The Interaction of a DC Transferred Arc With a Melting Metal: Experimental Measurements and Mathematical Description. 93-104B
Carbothermic Reduction of Chalcopyrite in the Presence of a Desulfurizer in a Plasma Medium. 519-527B

Plasma arc welding
Interfacial Tension Between Low Pressure Argon Plasma and Molten Copper and Iron. 597-601B

Plasma processing
See Plasma arc melting
Plasma arc welding

Plastic deformation
Phase Transformations in the Zirconium-Rich Part of the Zr—Fe System Resulting From Heat Treatment and Plastic Deformation. 27-33A
An Experimental Study on the Alignment of Cavities in a Superplastic Commercial Copper Alloy. 63-67A
Yielding and Deformation Behavior of the Single Crystal Superalloy PWA 1480. 85-95A
Theory of Plastic and Viscous Deformation. 811-826A
Elastic—Plastic Analysis of Hardened Layers in Rims Subjected to Repeated Rolling Contacts. 827-833A
Deformation Mechanisms of a Rapidly Solidified Al—8.8Fe—3.7Ce Alloy. 1713-1719A

Plastic flow
Geometric Models of Internal Shape Change as Shear Bands Form During Plane Strain Extension. 563-579A
Hot Extrusion of Aluminum Powder at Low Reduction Ratios: Analytical and Metallographic Studies. 703-711B

Plastic flow, Alloying effects
Plastic Flow and Microstructure of Cast Nickel Aluminides at 1273K. 2157-2162A

Plastic strain
See Plastic deformation

Plasticity
See also Superplasticity
Coupled Temperature, Stress, Phase Transformation Calculation Model Numerical Illustration of the Internal Stresses Evolution During Cooling of a Eutectoid Carbon Steel Cylinder. 1203-1212A

Plasticity, Microstructural effects
Deformation Characteristics of Retained Ferrite and Transformed Ferrite in a Dual-Phase Steel. 629-635A

Plate metal, Structural hardening
Effect of Plastic Deformation on the Coarsening of Dispersoids in a Rapidly Solidified Al—Fe—Ce Alloy. 555-562A

Platinum metal compounds
See Palladium compounds

Platinum metals
See Palladium

Point defects
See Interstitial defects

Poling
See Deoxidizing

Pollution
See Air pollution

Pollution abatement
Desulfurization of $CO:SO_2$ Contaminated Gases by Manganous Oxide. 149-161B

Pores
See Porosity

Porosity
Physical Chemistry of Gas Liquid Solder Reactions. 577-582B
Surface Tension of Aluminum-Rich Al—Cu Liquid Alloys. 1156-1160A
Void/Pore Distributions and Ductile Fracture. 1887-1895A
A Thermodynamic Prediction for Microporosity Formation in Aluminum-Rich Al—Cu Alloys. 1979-1987A

Portevin-Le Chatelier effect
See Serrated yielding

Potassium, Impurities
The Effect of Low Melting Point Impurities on the Properties of Aluminum—Lithium Alloys. 2181-2193A

Pots (electrolytic)
See Electrolytic cells

Powder compacts
See also Sintered compacts

Powder compacts, Extrusion
Hot Extrusion of Aluminum Powder at Low Reduction Ratios: Analytical and Metallographic Studies. 703-711B

Powder compacts, Mechanical properties
Internal Stress Superplasticity in Anisotropic Polycrystalline Zinc and Uranium. 451-462A
Microstructures and Superplastic Behavior of Eutectic Fe—C and Ni—Cr White Cast Irons Produced by Rapid Solidification. 1703-1711A
Deformation Mechanisms of a Rapidly Solidified Al—8.8Fe—3.7Ce Alloy. 1713-1719A

Powder compacts, Microstructure
Rapidly Solidified P/M X2020 Aluminum Alloys. 2037-2046A

Powder compacts, Powder technology
Densification Mechanism Maps for Hot Isostatic Pressing (HIP) of Unequal Sized Particles. 97-107A

Powder metallurgy
See Mechanical alloying

Powder metallurgy parts, Alloy development
Effects of Boron, Carbon, and Zirconium on the Structure and Properties of a P/M Nickel Base Superalloy. 69-77A

Powder metallurgy parts, Corrosion
The Stress-Corrosion Cracking Behavior of High-Strength Aluminum Powder Metallurgy Alloys. 135-149A

Powder metallurgy parts, Mechanical properties
Tensile Flow and Fracture Behavior of DO_3 and Fe—25 at.% Al and Fe—31 at.% Al Alloys. 283-291A
Microstructures and Properties of Rapidly Solidified Mg—10Al and Mg—12.5Al—1.5Si Alloys. 347-350A
The Role of Boron in Ductilizing Ni_3Al. 425-428A
Superplasticity in a High Strength Powder Aluminum Alloy With and Without SiC Reinforcement. 653-661A
Rapidly Solidified P/M X2020 Aluminum Alloys. 2037-2046A

Powder metallurgy parts, Metal working
Superplastic Forming of Rapid Solidification Processed Al—4Li—0.2Zr. 1333-1335A

Powder metallurgy parts, Microstructure
The Two-Dimensional Connectivity of Liquid Phase Sintered Microstructures. 909-914A

Powder metallurgy parts, Structural hardening
Effect of Plastic Deformation on the Coarsening of Dispersoids in a Rapidly Solidified Al—Fe—Ce Alloy. 555-562A

Powder technology
See Mechanical alloying

Powdering
The Undercooling of Aluminum. 1143-1150A

Powders
See Alloy powders
Ceramic powders
Metal powders
Spherical powder

Precious metal alloys
See Silver base alloys

Precious metal compounds
See Palladium compounds
Silver compounds

Precious metals
See Gold
Palladium
Silver

Precipitates
The Relative Influence of Dynamic and Static Precipitation on the Hot Ductility of Microalloyed Steels. 1929-1939A

Precipitates, Crystal growth
Effect of Plastic Deformation on the Coarsening of Dispersoids in a Rapidly Solidified Al—Fe—Ce Alloy. 555-562A
Coarsening of Dispersed Intermetallic Phases in Al—4.5Cu—2Mn Alloy. 1179-1190A
Silicide Formation in Ti—3Al—8V—6Cr—4Zr—4Mo. 2015-2025A
Phase Separation in a Ni—12.7 at.% Al Alloy at 550°C. 2027-2035A

Precipitation hardening
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A
Carbonitride Precipitation in Niobium/Vanadium Microalloyed Steels. 211-222A
Precipitate Shape Evolution Under Applied Stress—Thermodynamics and Kinetics. 233-247A
Microstructures and Properties of Rapidly Solidified Mg—10Al and Mg—12.5Al—1.5Si Alloys. 347-350A
Some Remarks on the Hardness and Yield Strength of Aluminum Alloy 7075 as a Function of Retrogression Time. 350-353A
Effect of Plastic Deformation on the Coarsening of Dispersoids in a Rapidly Solidified Al—Fe—Ce Alloy. 555-562A
Coarsening of Dispersed Intermetallic Phases in Al—4.5Cu—2Mn Alloy. 1179-1190A
The Precipitation Sequence of Ni_3Ti in Cobalt-Free Maraging Steel. 1191-1194A
The Aging Behavior of Homogenized Type 308 and 308CRE Stainless Steel. 1195-1201A
Thermal Stability of the Nickel-Base Superalloy B-1900 + Hafnium With Tantalum Variations. 1341-1351A
Phase Separation in a Ni—12.7 at.% Al Alloy at 550°C. 2027-2035A

Precipitation hardening alloys, Mechanical properties
Elevated Temperature Deformation Behavior of an Al—8.4Fe—3.6Ce Alloy. 893-902A

Precipitation hardening steels
See also Maraging steels

Precipitation hardening steels, Mechanical properties
Retardation of Hydrogen Embrittlement of 17-4 PH Stainless Steels by Nonmetallic Surface Layers. 162-164A
The Influence of Inclusion Spacing and Microstructure on the Fracture Toughness of the Secondary Hardening Steel AF1410. 1257-1263A

Precipitation heat treatment
See Precipitation hardening

Preferential attack (corrosion)
See Intergranular corrosion

Pressing
See Hot isostatic pressing

Pressure
See Capillary pressure

Pressure casting
On the Infiltration of Metal Matrix Composites. 1160-1163A

Pressure vessels, Materials selection
Microstructure and Mechanical Properties of a 3Cr—1.5Mo Steel. 1279-1290A

Process control
Correction to "Development of an Analytical Equation for Calculation of the Blast Furnace Fuel Rate". 478B

Propagation
See Crack propagation

Properzi process
See Continuous casting

Protective coatings, Corrosion
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. I. Diffusion Paths and Microstructures. 2061-2073A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. II. Diffusion Coefficients and Predicted Concentration Profiles. 2075-2086A
Predicting Diffusion Paths and Interface Motion in $\gamma/\gamma + \beta$, Ni—Cr—Al Diffusion Couples. 2087-2094A

Pulling (crystals)
See Crystal pulling

Pulse echo technique
See Ultrasonic testing

Pyrite, Oxidation
Studies on the Effect of Addition of Silver Ions on the Direct Oxidation of Pyrite. 641-647B

Pyroceram
See Ceramics

Quaternary systems, Phases (state of matter)
An Experimental and Thermodynamic Study of the Fe—Cr—C—N System at 1273K. 1753-1766A

Quench hardening
See Austempering

Quenching (cooling)
See Quenching and tempering
Rapid solidification

Quenching and tempering
Microstructure and Mechanical Properties of a 3Cr—1.5Mo Steel. 1279-1290A

Quenching stresses
See Residual stress

Quinary systems, Phases (state of matter)
A Study of Equilibria in the Fe—Cr—Ni—Mo—C—N System at 1273K. 1767-1778A

Rapid solidification
Microstructures and Properties of Rapidly Solidified Mg—10Al and Mg—12.5Al—1.5Si Alloys. 347-350A
Preparation of Amorphous Ni—Pd—P Particles by Melt Ejection Into Stirred Water and Their Hardness and Thermal Stability. 377-383A
Microstructural Characterization of a Rapidly Solidified Al—Mg—Mn Powder Alloy. 407-416A
Ultrasonic Characterization of Surface Modified Layers. 473-480A
A Fluid Mechanics Model of the Planar Flow Melt Spinning Process Under Low Reynolds Number Conditions. 557-563B
Liquid Separation Effects of Fe—Cu Alloys Solidified Under Different Cooling Rates. 565-575B
Lattice Modulation and Formation of Lamellar Duplex Ferrite/Cubic Carbide Microstructure in Rapidly Solidified Fe—Ni—Al—C Alloys. 759-766A
The Undercooling of Aluminum. 1143-1150A
Microstructural Observations and Thermal Stability of a Rapidly Solidified Aluminum—Gadolinium Alloy. 1533-1536A
Microstructural Characterization of Rapidly Solidified Al—Ta Alloys. 1915-1922A

Rare earth compounds
See also Dysprosium compounds
Terbium compounds

Rare earth compounds, Thermal properties
Gibbs Energies of Formation of Rare Earth Oxysulfides. 163-168B

Rare earth metals
See Cerium
Gadolinium

Reaction kinetics
The Kinetics of Leaching Galena With Ferric Nitrate. 25-30B
The Effect of Chloride Ion on the Ferric Chloride Leaching of Galena Concentrate. 59-69B
Leaching Studies of Chalcopyrite and Sphalerite With Hypochlorous Acid. 315-323B
Leaching Behavior of Ilmenite With Sulfuric Acid. 325-330B
Kinetics of the Dissolution of Scheelite in Aqueous Na_4EDTA Solutions. 331-337B
A Study of the Reaction of CO on Liquid Iron Alloys. 415-420B
Chlorination of Commercial Molybdenite Concentrate in a Fluidized Bed Reactor. 445-449B
Intrinsic Kinetics of the Reaction Between Zinc Sulfide and Water Vapor. 451-457B

Reactions (chemical)
See Carbothermic reactions
Chlorination
Deoxidizing
Desulfurizing
Hydrogen reduction
Interface reactions
Oxidation

Reactivity (chemical)
See Activity (chemical)

Reactors
See Boiling water reactors

Recovering
See Heat recovery

Recrystallization
See also Grain refinement
Effect of Manganese on the Recrystallization Texture of Phosphorus-Containing Low-Carbon Steel Sheet. 957-968A

Recrystallization, Alloying effects
Austenite Recrystallization in Nb/V Microalloyed Steels. 481-483A

Recuperators
Modeling of Fixed Bed Heat Storage Units Utilizing Phase Change Materials. 339-346B

Red hardness
See Hardness

Reduction (chemical)
See Direct reduction
Hydrogen reduction

Reduction (electrolytic)
See also Electrowinning
The Measurement of the Diffusion Coefficient of Uranium(VI) in Aqueous Uranyl Sulfate Solutions. 19-23B

Reduction (metal working)
See Cold rolling
Hot rolling

Refining
See Electroslag refining

Refractories, Thermal properties
Thermal Stress Fracture of Refractory Lining Components. I. Thermoelastic Analysis. 355-363B
Thermal Stress Fracture of Refractory Lining Components. II. Safe Heating and Cooling Rates. 365-370B
Thermal Stress Fracture of Refractory Lining Components. III. Analysis of Fracture. 371-380B

Refractory alloys
See Molybdenum base alloys
Niobium base alloys
Tungsten base alloys
Vanadium base alloys

Refractory materials
See Refractories

Refractory metal compounds
See Tungsten carbide

Refractory metals
See Chromium
Molybdenum
Tantalum
Tungsten
Vanadium

Reinforcement
See Fiber composites

Relaxation
High Temperature Deformation of a Commercial Aluminum Alloy. 293-301A

Research
The Greening of Materials Science and Engineering. 5-17B
The Greening of Materials Science and Engineering. 363-374A

Residual stress
Internal Stress Superplasticity in Anisotropic Polycrystalline Zinc and Uranium. 451-462A
Coupled Temperature, Stress, Phase Transformation Calculation Model Numerical Illustration of the Internal Stresses Evolution During Cooling of a Eutectoid Carbon Steel Cylinder. 1203-1212A
X-Ray Macrostress Determination on Textured Material; Use of the ODF for Calculating the X-Ray Compliances. 1229-1238A

Resistance welds
See Welded joints

Resistivity
See also Superconductivity

Resistivity, Alloying effects
The Effect of Strontium on the Electrical Resistivity and Conductivity of Aluminum—Silicon Alloys. 941-947A

Resistivity, Microstructural effects
Electrical Properties of Al—In—Sn Alloys Directionally Solidified in High and Low Gravitational Fields. 1511-1517A

Resonance testing
See Ultrasonic testing

Retained austenite
The Role of Retained Austenite in Stress Corrosion Cracking of Steels. 1023-1028A
Isothermal Martensite Formation in an AISI 52100 Ball Bearing Steel. 1389-1394A
Effect of Isothermal Martensite on Properties of an AISI 52100 Ball Bearing Steel. 1531-1532A

Revaporization
See Vaporizing

Reviews
United States Extractive Metallurgy—the 1980s and Beyond. 289-313B

Rheological properties
See Viscoplasticity
Viscosity

Ribbons (metallic)
See Tapes (metallic)

Roasting
See also Sintering (roasting)
Intrinsic Kinetics of the Reaction Between Zinc Sulfide and *Water Vapor.* 451-457B
Kinetics of Zinc Oxide Formation From Zinc Sulfide by Reaction With Lime in the Presence of Water Vapor. 727-732B

Rolling
See Cold rolling
Hot rolling

Rolling contact
Elastic—Plastic Analysis of Hardened Layers in Rims Subjected to Repeated Rolling Contacts. 827-833A

Roughing (rolling)
See Hot rolling

Rupture strength
See Creep rupture strength

Sap process
See Dispersion hardening

Scale (corrosion)
Adherent Al_2O_3 Scales Formed on Undoped NiCrAl Alloys. 164-167A
A Model for the Oxide Growth Stress and Its Effect on the *Creep of Metals.* 975-986A

Scrubbing
See Gas scrubbing

Season cracking
See Stress corrosion cracking

Seeding (inoculation)
See Inoculation

Segregations
*A Surface Segregation Study in Phosphorus- and Sulfur-*Doped Type 304 Stainless Steels. 19-26A
Permeability for Flow of Interdendritic Liquid in Columnar—Dendritic Alloys. 245-256B
Viscosities of Aluminum-Rich Al—Cu Liquid Alloys. 421-424B
The Evolution of Macrosegregation in Statically Cast Binary Ingots. 611-616B
Surface Segregation and Surface Tension of Liquid Mixtures. 695-702B
Densities of Aluminum-Rich Aluminum—Copper Alloys During Solidification. 721-723A
Site Competition Between Sulfur and Carbon at Grain Boundaries and Their Effects on the Grain Boundary Cohesion in Iron. 1109-1115A
Effects of Grain-Boundary Segregation and Precipitation on the Hydrogen Susceptibility of Nickel. 1653-1662A
The Effect of Solution Heat-Treatment on Grain Boundary Segregation and Stress-Corrosion Cracking of Al—Zn—Mg Alloys. 1735-1744A

Segregations, Cooling effects
Effect of Quench Rate on Microstructure and Tensile Properties of AISI 4320 and 4340 Steels. 115-121A

Segregations, Metallography
Nonequilibrium Solute Segregation to Austenite Grain Boundaries in Low Alloy Ferritic and Austenitic Steels. 399-406A

Selenium, Solubility
Evaluation of the Behavior of Selenium in Silicate Slag. 181-187B

Self diffusion
See Diffusion

Semiconductor devices, Fabrication
Physical Chemistry of Gas Liquid Solder Reactions. 577-582B

Semiconductors, Heat treatment
Pulsed Laser Control of Surface Solidification. 354-357A

Semicontinuous casting
See Continuous casting

Semikilling
See Deoxidizing

Sensitivity
See Notch sensitivity

Sensitizing
Low Temperature Sensitization of Type 304 Stainless Steel Pipe Weld Heat Affected Zone. 1483-1493A

Sensitizing, Microstructural effects
Effect of Grain Boundary Structure on Sensitization and Corrosion of Stainless Steel. 1117-1124A

Separation
The Leaching Kinetics of Cobalt and Nickel From Aluminum-Coprecipitated Products. 635-640B

Serrated yielding
Geometric Models of Internal Shape Change as Shear Bands Form During Plane Strain Extension. 563-579A
Thermal and Strain Rate Softening in Al—Mg Sheet During Necking and Shear Band Formation. 1154-1156A

Shape
See Particle shape

Sheet metal, Mechanical properties
Geometric Models of Internal Shape Change as Shear Bands *Form During Plane Strain Extension.* 563-579A

Sheet metal, Metal working
Thermal and Strain Rate Softening in Al—Mg Sheet During *Necking and Shear Band Formation.* 1154-1156A

Sheet metal, X ray analysis
X-Ray Macrostress Determination on Textured Material; Use *of the ODF for Calculating the X-Ray Compliances.* 1229-1238A

Shielded arc welding
See Gas metal arc welding
Plasma arc welding
Submerged arc welding

Shock resistance
Thermal Stress Fracture of Refractory Lining Components. II. Safe Heating and Cooling Rates. 365-370B

Short arc welding
See Gas metal arc welding

Shrinkage
A Thermodynamic Prediction for Microporosity Formation in Aluminum-Rich Al—Cu Alloys. 1979-1987A

Sigma hard facing
See Gas metal arc welding

Sigma phase
The Process of σ-Phase Solution in 25Cr—20Ni Austenitic *Steels.* 1171-1177A
The Aging Behavior of Homogenized Type 308 and 308CRE Stainless Steel. 1195-1201A

Sigma welding
See Gas metal arc welding

Silica
See Silicon dioxide

Silicides, Crystal growth
Silicide Formation in Ti—3Al—8V—6Cr—4Zr—4Mo. 2015-2025A

Silicon, Alloying elements
Development of a New Method to Produce Melts Suitable for the Production of Amorphous Fe—Si—B Materials. 71-79B
Interparticle Spacings and Undercoolings in Al—Si Eutectic Microstructures. 707-713A
The Effect of Strontium on the Electrical Resistivity and Con*ductivity of Aluminum—Silicon Alloys.* 941-947A
Growth of Interdendritic Eutectic in Directionally Solidified Al—Si Alloys. 1137-1142A
The Mechanism of Silicon Modification in Aluminum—Silicon *Alloys: Impurity Induced Twinning.* 1721-1733A
Oxidation of Fe—7Cr—12Ni—(0-6)Al—(0-7)Si Alloys. 1805-1812A

Silicon, Binary systems
Calculating Activities From the Phase Diagram Involving an Intermediate Compound Using Its Entropy of Formation. 323-326A

Silicon, Synthesis
Discussion of "Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon" and Authors' Reply. 471-477B

Silicon, Ternary systems
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) Liquid Alloys. 433-444B
Discussion of "Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon" and Authors' Reply. 471-477B
Phase Equilibria in the Al—Si—C System. 2005-2014A

Silicon carbide, Composite materials
Analysis of the Creep Behavior of Silicon Carbide Whisker Reinforced 2124 Aluminum (T4). 109-114A
A Study of the Hot-Working Behavior of SiC—Al Alloy Composites and Their Matrix Alloys by Hot Torsion Testing. 303-312A
Superplasticity in a High Strength Powder Aluminum Alloy With and Without SiC Reinforcement. 653-661A
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A
On the Infiltration of Metal Matrix Composites. 1160-1163A
Fracture Characteristics of Al—4% Mg Mechanically Alloyed With SiC. 2115-2128A
Ti—6Al—4V—2Ni as a Matrix Material for a SiC-Reinforced Composite. 2151-2156A

Silicon carbide, Synthesis
Discussion of "Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon" and Authors' Reply. 471-477B

Silicon compounds
See Silicon carbide
Silicon dioxide

Silicon dioxide, Reactions (chemical)
Activity of Silica in Calcium-Aluminate Based Slags. 746-748B

Silicon iron
See Silicon steels

Silicon steels, Metallography
In Situ Observation of Solidification of Silicon Steel by Synchrotron Radiation X-Ray Topography. 723-727A

Silver, Alloying additive
Correction to "Effect of Small Additions of Silver on the Eutectic Temperature in the Lead-Tin System". 478B

Silver, Ternary systems
The Coordination Cluster Theory: Extension to Multicomponent Systems. 1779-1783A

Silver base alloys, Mechanical properties
Temperature and Composition Dependence of the Yield Stress of the Ag—Mg Intermetallic β' Phase. 1153-1154A

Silver compounds, Mechanical properties
Temperature and Composition Dependence of the Yield Stress of the Ag—Mg Intermetallic β' Phase. 1153-1154A

Simulation
See Computer simulation

Single crystals, Crystal growth
The Growth of Single Crystal Terfenol-D Crystals. 223-231A

Single crystals, Mechanical properties
Yielding and Deformation Behavior of the Single Crystal Superalloy PWA 1480. 85-95A
Fatigue Crack Growth in MAR-M200 Single Crystals. 581-591A
Elevated-Temperature Fatigue Crack Growth Behavior of MAR-M200 Single Crystals. 593-602A

Sintered compacts, Microstructure
The Two-Dimensional Connectivity of Liquid Phase Sintered Microstructures. 909-914A

Sintering
See Sintering (roasting)

Sintering (powder metallurgy)
See Liquid phase sintering

Sintering (roasting)
Nonisothermal Flow of Gases Through Packed Beds. 279-280B

Size reduction
See Comminution

Slags
Dynamics of the Hot Metal Dephosphorization With Na_2O Slags. 687-693B
Activity of Silica in Calcium-Aluminate Based Slags. 746-748B

Slags, Solubility
Evaluation of the Behavior of Selenium in Silicate Slag. 181-187B
Modeling of Sulfide Capacities of Silicate Melts. 591-596B

Sliding contacts
See Electric contacts

Slip
See also Slip planes
Crystal Slip Modeling of Small Strain Yield Behavior in Textured Copper Tubing. 255-264A
Correlation of Tensile Properties, Deformation Modes, and Phase Stability in Commercial β-Phase Titanium Alloys. 265-271A

Slip planes
Effect of Hydrogen on Four-Point Bend Tests of U-Notched AISI 1090 Steel. 335-340A
Deformation Characteristics of Retained Ferrite and Transformed Ferrite in a Dual-Phase Steel. 629-635A

Smelting
Antimony Activities in Copper Mattes. 189-194B

Snoek effect
Internal Friction Study of Substitutional—Interstitial Interaction in Niobium—Vanadium Alloys. 1415-1420A

Soaking
Mathematical Model of the Thermal Processing of Steel Ingots. I. Heat Flow Model. 119-130B
Mathematical Model of the Thermal Processing of Steel Ingots. II. Stress Model. 131-147B

Sodium, Alloying additive
The Mechanism of Silicon Modification in Aluminum—Silicon Alloys: Impurity Induced Twinning. 1721-1733A

Sodium, Impurities
The Effect of Low Melting Point Impurities on the Properties of Aluminum—Lithium Alloys. 2181-2193A

Sodium aluminum fluoride
See Cryolite

Soft annealing
See Annealing

Soft solders
See Solders

Softening
See Strain softening

Solders, Solubility
Physical Chemistry of Gas Liquid Solder Reactions. 577-582B

Solid phases, Alloying effects
Microstructures and Mechanical Properties of Ni_3Al Alloyed With Iron Additions. 1265-1277A

Solid phases, Cooling effects
The Undercooling of Aluminum. 1143-1150A

Solidification
See also Directional solidification
Rapid solidification
Permeability for Flow of Interdendritic Liquid in Columnar—Dendritic Alloys. 245-256B
A Study of the Coarsening of Liquid—Solid Mixtures Using Synchrotron Radiation Microradiography. 487-490A
Effect of Undercooling on the Microstructure of Ni—35 at.% Mo (Eutectic) and Ni—38 at.% Mo (Hypereutectic) Alloys. 525-542A
The Evolution of Macrosegregation in Statically Cast Binary Ingots. 611-616B
Interparticle Spacings and Undercoolings in Al—Si Eutectic Microstructures. 707-713A
In Situ Observation of Solidification of Silicon Steel by Synchrotron Radiation X-Ray Topography. 723-727A
Dendritic Growth of Undercooled Nickel—Tin. I. 915-924A
Surface Tension of Aluminum-Rich Al—Cu Liquid Alloys. 1156-1160A
Correction to "Effect of Undercooling on the Microstructure of Ni-35 At. Pct Mo (Eutectic) and Ni-38 At. Pct Mo (Hypereutectic Alloys". 1164-1165A

Solidus
The Determination of the Titanium-Rich Liquidus and Solidus of the Ti—Fe System. 1679-1681A

Solubility
The Diffusion and Solubility of Oxygen in Solid Nickel. 43-50A

Solubility, Alloying effects
Effect of Titanium on the Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 231-235B

Solubility, pH effects
Modeling of Sulfide Capacities of Silicate Melts. 591-596B

Solution hardening
See Solution strengthening

Solution heat treatment
The Influence of Heat Treatment on the Structure and Properties of a Near-α Titanium Alloy. 877-891A

Solution strengthening, Composition effects
Effects of Hydrogen on Low Temperature Hardening and Embrittlement of V—Cr Alloys. 1593-1601A

Solvent extraction
Kinetics of the Dissolution of Scheelite in Aqueous Na_4EDTA Solutions. 331-337B
Chemical Equilibrium Studies on the Nickel Sulfate—Acetate Buffer / β-Alkyl-8-Hydroxy—Quinoline—Xylene System. 399-407B
Kinetics of Extraction in the Cupric-Chloro-Quaternary Amine System. 483-488B
Correction to "Water and Solute Activities of H_2SO_4—$Fe_2(SO_4)_3$—H_2O and HCl—$FeCl_3$—H_2O Solution Systems: II. Activities of Solutes". 620B
Software for Computation of Aqueous Phase Species Distributions and Solvent Extraction With Liquid Cation Exchangers. 743-746B

Specific density
See Density

Specific gravity
See Density

Specific resistance
See Resistivity

Specific volume
See Density

Specific weight
See Density

Spectroscopy
See Mossbauer spectroscopy

Spelter
See Zinc

Sphalerite, Reduction (chemical)
Leaching Studies of Chalcopyrite and Sphalerite With Hypochlorous Acid. 315-323B

Spherical powder
Preparation of Amorphous Ni—Pd—P Particles by Melt *Ejection Into Stirred Water and Their Hardness and Thermal Stability.* 377-383A

Spheroidizing
Kinetics of Pearlite Spheroidization. 1359-1369A
Mechanisms of Pearlite Spheroidization. 1403-1414A

Sponginess
See Porosity

Spot welding
A Comprehensive Representation of Transient Weldpool Development in Spot Welding Operations. 1325-1332A

Stability
See Phase stability
Thermal stability

Stacking faults
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A

Stainless steels
See also Austenitic stainless steels
Duplex stainless steels
Ferritic stainless steels

Stainless steels, Mechanical properties
Retardation of Hydrogen Embrittlement of 17-4 PH Stainless Steels by Nonmetallic Surface Layers. 162-164A

Static fatigue
See Creep rupture strength

Statistical analysis
Weibull Statistical Fracture Theory for the Fracture of Ceramics. 1829-1834A

Steel alloys
See Alloy steels

Steel constituents
See Austenite
Cementite
Ferrite
Martensite
Pearlite
Retained austenite

Steel making
Physical Modeling of Liquid/Liquid Mass Transfer in Gas Stirred Ladles. 381-390B
A Study of the Reaction of CO on Liquid Iron Alloys. 415-420B
Velocity and Absorption Coefficient of Ultrasonic Waves in Molten and Glassy Silicates and Borates. 549-555B
Physical Modeling of Gas/Liquid Mass Transfer in a Gas Stirred Ladle. 673-680B
Equilibrium Between Sulfur and Titanium in Liquid Iron. 681-685B
Dynamics of the Hot Metal Dephosphorization With Na_2O *Slags.* 687-693B

Steels
See also Alloy steels
Aluminum killed steels
Austenitic stainless steels
Bearing steels
Carbon manganese steels
Carbon steels
Chromium molybdenum steels
Chromium steels
Corrosion resistant steels
Dual phase steels
Duplex stainless steels
Ferritic stainless steels
High speed tool steels
High strength low alloy steels
High strength steels
Low alloy steels
Manganese steels
Maraging steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel steels
Precipitation hardening steels
Silicon steels
Stainless steels

Steels, Casting
The Effect of Tundish Wall Inclination on the Fluid Flow and Mixing: a Modeling Study. 81-92B

Steels, Phase transformations
Coupled Temperature, Stress, Phase Transformation Calculation Model Numerical Illustration of the Internal Stresses Evolution During Cooling of a Eutectoid Carbon Steel Cylinder. 1203-1212A

Steels, Refining
Heat Transfer and Lance Clogging During Submerged Powder Injection. 105-117B

Gibbs Energies of Formation of Rare Earth Oxysulfides. 163-168B
Dynamics of the Hot Metal Dephosphorization With Na_2O Slags. 687-693B

Steels, Structural hardening
The Clustering and Coarsening of Carbon Multiplets During the Aging of Martensite From Mössbauer Spectroscopy: *the Preprecipitation Stage of Epsilon Carbide.* 1371-1388A

Steels, Welding
A Comprehensive Representation of Transient Weldpool Development in Spot Welding Operations. 1325-1332A

Stirring
See also Electromagnetic stirring
Physical Modeling of Liquid/Liquid Mass Transfer in Gas Stirred Ladles. 381-390B
Measurement of Physical Characteristics of Bubbles in *Gas—Liquid Plumes. II. Local Properties of Turbulent Air—* Water Plumes in Vertically Injected Jets. 659-671B
Physical Modeling of Gas/Liquid Mass Transfer in a Gas Stirred Ladle. 673-680B

Stitch welding
See Spot welding

Storage
See Heat storage

Strain
Modeling of Local Strains in Ductile Fracture. 1877-1886A

Strain hardening
On the Contribution of Concurrent Grain Growth to Strain *Sensitive Flow of a Superplastic Al—Cu Eutectic Alloy.* 417-424A
Microstructure—Composition Relationships and M_s Temperatures in Fe—Cr—Mn—N Alloys. 767-775A
Theory of Plastic and Viscous Deformation. 811-826A
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A
Ductile Two-Phase Alloys: Prediction of Strengthening at High Strains. 1249-1256A
Plane-Strain Work Hardening and Transient Behavior of Interstitial-Free Steel. 2129-2134A
Cyclic Hardening Mechanisms in Nimonic 80A. 2135-2141A
Combined Influence of Geometric Defects and Thermal Gradients on Tensile Ductility. 2143-2150A

Strain hardening, Alloying effects
The Effect of Aluminum on the Work Hardening and Wear Resistance of Hadfield Manganese Steel. 1629-1639A

Strain hardening, Microstructural effects
Microstructural Effects and Crack Closure During Near Threshold Fatigue Crack Propagation in a High Strength Steel. 865-876A

Strain hardening, Temperature effects
Mechanical Behavior of Aluminum—Lithium Alloys at Cryogenic Temperatures. 1695-1701A

Strain rate
Theory of Mobile Dislocation Density: Application to the Deformation of 304 Stainless Steel. 51-62A
High Temperature Deformation of a Commercial Aluminum Alloy. 293-301A
A Study of the Hot-Working Behavior of SiC—Al Alloy Com*posites and Their Matrix Alloys by Hot Torsion Testing.* 303-312A
On the Contribution of Concurrent Grain Growth to Strain Sensitive Flow of a Superplastic Al—Cu Eutectic Alloy. 417-424A
Thermal and Strain Rate Softening in Al—Mg Sheet During Necking and Shear Band Formation. 1154-1156A

Strain softening
High Temperature Deformation of a Commercial Aluminum Alloy. 293-301A
On the Contribution of Concurrent Grain Growth to Strain Sensitive Flow of a Superplastic Al—Cu Eutectic Alloy. 417-424A

Strategic materials
The Greening of Materials Science and Engineering. 5-17B
The Greening of Materials Science and Engineering. 363-374A
Oxidation of Fe—7Cr—12Ni—(0-6)Al—(0-7)Si Alloys. 1805-1812A

Strengthening (solution)
See Solution strengthening

Stress analysis
X-Ray Macrostress Determination on Textured Material; Use of the ODF for Calculating the X-Ray Compliances. 1229-1238A

Stress concentration
Mathematical Model of the Thermal Processing of Steel Ingots. I. Heat Flow Model. 119-130B
*Mathematical Model of the Thermal Processing of Steel In*gots. II. Stress Model. 131-147B

Stress corrosion cracking
The Stress-Corrosion Cracking Behavior of High-Strength Aluminum Powder Metallurgy Alloys. 135-149A
The Mechanism of Intergranular Cracking of Ni—Cr—Fe Al*loys in Sodium Tetrathionate.* 1313-1323A
A Closer Look at the Transgranular Stress Corrosion Cracking of Cu—30Zn in Cuprous Ammonia. 1539-1542A

Stress corrosion cracking, Alloying effects
The Distribution of Palladium in a Palladium-Modified 4130 Steel. 519-523A

Stress corrosion cracking, Microstructural effects
Microstructural Effects on the Stress Corrosion Cracking Behavior of Medium and High Strength Steels. 1011-1022A
The Role of Retained Austenite in Stress Corrosion Cracking *of Steels.* 1023-1028A

The Effect of Solution Heat-Treatment on Grain Boundary Segregation and Stress-Corrosion Cracking of Al—Zn—Mg Alloys. 1735-1744A

Stress corrosion cracking, Welding effects
Low Temperature Sensitization of Type 304 Stainless Steel Pipe Weld Heat Affected Zone. 1483-1493A

Stress corrosion resistance
See Corrosion resistance

Stress distribution
See Stress concentration

Stress relieving
See Grain refinement

Stress rupture strength
See Creep rupture strength

Stress strain curves
Correlation of Tensile Properties, Deformation Modes, and Phase Stability in Commercial β-Phase Titanium Alloys. 265-271A
Tensile Flow and Fracture Behavior of DO_3 and Fe—25 at.% Al and Fe—31 at.% Al Alloys. 283-291A
High Temperature Deformation of a Commercial Aluminum Alloy. 293-301A
Effect of Hydrogen on Four-Point Bend Tests of U-Notched AISI 1090 Steel. 335-340A
On the Contribution of Concurrent Grain Growth to Strain Sensitive Flow of a Superplastic Al—Cu Eutectic Alloy. 417-424A
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A
The Effect of Hydrogen on Mechanical Properties in Ti—10V—2Fe—3Al. 1421-1430A
Creep and Ductility in an Al—Cu Solid-Solution Alloy. 2105-2114A
Plane-Strain Work Hardening and Transient Behavior of Interstitial-Free Steel. 2129-2134A
Combined Influence of Geometric Defects and Thermal Gradients on Tensile Ductility. 2143-2150A

Stress strain curves, Temperature effects
Mechanical Behavior of Aluminum—Lithium Alloys at Cryogenic Temperatures. 1695-1701A

Stresses
See Contact stresses
Residual stress
Thermal stresses

Strontium, Alloying additive
The Effect of Strontium on the Electrical Resistivity and Conductivity of Aluminum—Silicon Alloys. 941-947A

Structural hardening
See Precipitation hardening
Solution strengthening
Strain hardening
Surface hardening

Structures (crystalline)
See Columnar structure
Crystal structure
Dendritic structure
Equiaxed structure
Grain structure
Graphitic structure
Hypereutectic structures
Hypoeutectic structures
Interdendritic structure
Lamellar structure
Microstructure
Widmanstatten structure

Submerged arc welding
Structure—Property Correlation of Submerged-Arc and Gas-Metal-Arc Weldments in HY-100 Steel. 987-999A

Submerged arc welds
See Welded joints

Sulfides, Alloying effects
Equilibrium Between Sulfur and Titanium in Liquid Iron. 681-685B

Sulfides, Oxidation
Kinetics of Zinc Oxide Formation From Zinc Sulfide by Reaction With Lime in the Presence of Water Vapor. 727-732B

Sulfides, Reactions (chemical)
Intrinsic Kinetics of the Reaction Between Zinc Sulfide and Water Vapor. 451-457B

Sulfides, Reduction (chemical)
Lime-Enhanced Carbon Monoxide Reduction of Cuprous Sulfide. 719-725B

Sulfides, Solubility
Modeling of Sulfide Capacities of Silicate Melts. 591-596B

Sulfur, Alloying elements
A Surface Segregation Study in Phosphorus- and Sulfur-Doped Type 304 Stainless Steels. 19-26A

Sulfur, Binary systems
A Thermodynamic Analysis of the Pb—S System and Calculation of the Pb—S Phase Diagram. 237-244B

Sulfur, Diffusion
Grain Boundary Segregation of Phosphorus and Sulfur in Types 304L and 316L Stainless Steel and Its Effect on Intergranular Corrosion in the Huey Test. 691-699A
Site Competition Between Sulfur and Carbon at Grain Boundaries and Their Effects on the Grain Boundary Cohesion in Iron. 1109-1115A
Effects of Grain-Boundary Segregation and Precipitation on the Hydrogen Susceptibility of Nickel. 1653-1662A

Sulfur, Impurities
Equilibrium Between Sulfur and Titanium in Liquid Iron. 681-685B

Sulfuric acid leaching
Leaching Behavior of Ilmenite With Sulfuric Acid. 325-330B

Sulphur
See Sulfur

Superalloys, Alloy development
Effects of Boron, Carbon, and Zirconium on the Structure and Properties of a P/M Nickel Base Superalloy. 69-77A

Superalloys, Chemical analysis
Microdistribution of Cerium in Steel. 499-507A

Superalloys, Crystal growth
Abnormal Grain Growth Behavior of an Oxide Dispersion *Strengthened Superalloy.* 777-784A

Superalloys, Mechanical properties
Yielding and Deformation Behavior of the Single Crystal Superalloy PWA 1480. 85-95A
Fatigue Crack Growth in MAR-M200 Single Crystals. 581-591A
Elevated-Temperature Fatigue Crack Growth Behavior of MAR-M200 Single Crystals. 593-602A
The Effect of the Lower Stress Level on the Cyclic Creep Behavior of an ODS Superalloy. 1029-1033A
Effects of Grain Size and Precipitate Size on the Fatigue *Crack Growth Behavior of Alloy 718 at 427°C.* 1431-1449A
The Effect of Hydrogen on Fracture Toughness of the Fe—Ni—Co Superalloy IN903. 1469-1482A
Effect of Initial Gamma Prime Size on the Elevated Temperature *Creep Properties of Single Crystal Nickel Base Superalloys.* 1961-1970A

Superalloys, Powder technology
Densification Mechanism Maps for Hot Isostatic Pressing (HIP) of Unequal Sized Particles. 97-107A
Characterization of Inconel Alloy MA 6000 Powder. 747-752A

Superalloys, Solubility
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
Effect of Titanium on the Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 231-236B

Superalloys, Structural hardening
Thermal Stability of the Nickel-Base Superalloy B-1900 + Hafnium With Tantalum Variations. 1341-1351A
Cyclic Hardening Mechanisms in Nimonic 80A. 2135-2141A

Superconductivity, Microstructural effects
Electrical Properties of Al—In—Sn Alloys Directionally Solidified in High and Low Gravitational Fields. 1511-1517A

Superconductors, Synthesis
Synthesis of a Superconducting Oxide by Oxidation of a Metallic Precursor. 1813-1817A

Supercooling
Equiaxed Dendrite Growth in Alloys at Small Supercooling. 341-345A
Effect of Undercooling on the Microstructure of Ni—35 at.% Mo (Eutectic) and Ni—38 at.% Mo (Hypereutectic) Alloys. 525-542A
Interparticle Spacings and Undercoolings in Al—Si Eutectic *Microstructures.* 707-713A
Dendritic Growth of Undercooled Nickel—Tin. I. 915-924A
Dendritic Growth of Undercooled Nickel—Tin. II. 925-932A
The Undercooling of Aluminum. 1143-1150A
Correction to "Effect of Undercooling on the Microstructure of Ni-35 At. Pct Mo (Eutectic) and Ni-38 At. Pct Mo (Hypereutectic Alloys". 1164-1165A

Superlattices
Lattice Modulation and Formation of Lamellar Duplex Ferrite/Cubic Carbide Microstructure in Rapidly Solidified *Fe—Ni—Al—C Alloys.* 759-766A

Superplastic forming
Superplastic Forming of Rapid Solidification Processed Al—*4Li—0.2Zr.* 1333-1335A

Superplasticity
An Experimental Study on the Alignment of Cavities in a Superplastic *Commercial Copper Alloy.* 63-67A
Internal Stress Superplasticity in Anisotropic Polycrystalline Zinc and Uranium. 451-462A
Microstructural Change During *Superplastic Deformation of* δ-Ferrite/Austenite Duplex Stainless Steel. 663-672A
Microstructures and Superplastic Behavior of Eutectic Fe—C and Ni—Cr White Cast Irons Produced by Rapid Solidification. 1703-1711A

Superplasticity, Composition effects
Superplasticity in a High Strength Powder Aluminum Alloy *With and Without SiC Reinforcement.* 653-661A

Superplasticity, Microstructural effects
On the Contribution of Concurrent Grain Growth to Strain *Sensitive Flow of a Superplastic Al—Cu Eutectic Alloy.* 417-424A

Surface chemistry
Surface Segregation and Surface Tension of Liquid Mixtures. 695-702B

Surface diffusion
See Diffusion

Surface hardening
See also Carburizing
Laser beam hardening
Ultrasonic Characterization of Surface Modified Layers. 473-480A
Elastic—Plastic Analysis of Hardened Layers in Rims Subjected to Repeated Rolling Contacts. 827-833A

Surface layer, Mechanical properties
Elastic—Plastic Analysis of Hardened Layers in Rims Subjected to Repeated Rolling Contacts. 827-833A

Surface properties
See Surface structure
Surface tension
Wettability

Surface structure
A Fluid Mechanics Model of the Planar Flow Melt Spinning Process Under Low Reynolds Number Conditions. 557-563B

Surface tension
Interfacial Tension Between Low Pressure Argon Plasma and Molten Copper and Iron. 597-601B
Surface Segregation and Surface Tension of Liquid Mixtures. 695-702B

Surface tension, Composition effects
Surface Tension of Aluminum-Rich Al—Cu Liquid Alloys. 1156-1160A

Surfacing
See Hard surfacing

Systems (metallurgical)
See Binary systems
Quaternary systems
Quinary systems
Ternary systems

Tanks (electrolytic)
See Electrolytic cells

Tantalum, Alloying elements
Microstructural Characterization of Rapidly Solidified Al—Ta Alloys. 1915-1922A

Tapes (metallic), Casting
A Fluid Mechanics Model of the Planar Flow Melt Spinning Process Under Low Reynolds Number Conditions. 557-563B

Temperature
See Curie temperature
Eutectic temperature
Glass transition temperature
Temperature gradient
Transition temperature (superconductivity)

Temperature gradient
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A
An Experimental Investigation of Deformation-Induced Heating During Tensile Testing. 1035-1042A

Tempering
See Quenching and tempering

Tenacity
See Tensile strength

Tensile properties
See also Elongation
Tensile strength
Yield strength
Correlation of Tensile Properties, Deformation Modes, and Phase Stability in Commercial β-Phase Titanium Alloys. 265-271A
Geometric Models of Internal Shape Change as Shear Bands Form During Plane Strain Extension. 563-579A
Cryogenic Properties of a P/M Ni_3Al—B Alloy. 1819-1820A
Rapidly Solidified P/M X2020 Aluminum Alloys. 2037-2046A

Tensile properties, Alloying effects
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Tensile properties, Cooling effects
Effect of Quench Rate on Microstructure and Tensile Properties of AISI 4320 and 4340 Steels. 115-121A
The Influence of Heat Treatment on the Structure and Properties of a Near-α Titanium Alloy. 877-891A

Tensile properties, Heating effects
Microstructure and Mechanical Properties of a 3Cr—1.5Mo Steel. 1279-1290A

Tensile properties, Microstructural effects
The Effect of Processing Parameters on the Tensile Properties of Alumina Fiber Reinforced Magnesium. 273-281A
Microstructures and Properties of Rapidly Solidified Mg—10Al and Mg—12.5Al—1.5Si Alloys. 347-350A

Tensile properties, Temperature effects
Tensile Flow and Fracture Behavior of DO_3 and Fe—25 at.% Al and Fe—31 at.% Al Alloys. 283-291A
High Temperature Deformation of a Commercial Aluminum Alloy. 293-301A
Mechanical Behavior of Aluminum—Lithium Alloys at Cryogenic Temperatures. 1695-1701A

Tensile strength
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A
Ti—6Al—4V—2Ni as a Matrix Material for a SiC-Reinforced Composite. 2151-2156A

Tensile strength, Alloying effects
Preparation, Mechanical Strengths, and Thermal Stability of Ni—Si—B and Ni—P—B Amorphous Wires. 621-628A
Microstructures and Mechanical Properties of Ni_3Al Alloyed With Iron Additions. 1265-1277A

Tensile strength, Impurity effects
The Effect of Low Melting Point Impurities on the Properties of Aluminum—Lithium Alloys. 2181-2193A

Tensile strength, Temperature effects
A Study of the Hot-Working Behavior of SiC—Al Alloy Composites and Their Matrix Alloys by Hot Torsion Testing. 303-312A

Tensile tests
See Tension tests

Tensile yield strength
See Yield strength

Tension
See Surface tension

Tension tests
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A
An Experimental Investigation of Deformation-Induced Heating During Tensile Testing. 1035-1042A

Terbium compounds, Crystal growth
The Growth of Single Crystal Terfenol-D Crystals. 223-231A

Ternary systems, Diffusion
A Practical Solution for the Diffusion Equations in Binary and Multicomponent Systems With Constant Intrinsic Diffusion Coefficients. 801-809A

Ternary systems, Phases (state of matter)
Crystallization Studies in the Lead-Rich Corner of the System Pb—Mg—Bi. 169-180B
A Thermodynamic Evaluation of the C—Fe—W System. 175-188A
Intermetallic Phases Formed During DC-Casting of an Al—0.25Fe—0.13Si Alloy. 189-200A
Phase Rule and Independent Components. 327-333A
The Nature of the $FeAl_3$—Liquid—$(FeMn)Al_6$ Reaction in the Al—Fe—Mn System. 393-397A
Phase Relations Associated With the Aluminum Blast Furnace: Aluminum Oxycarbide Melts and Al—C—X (X = Iron, Silicon) *Liquid Alloys.* 433-444B
Discussion of "Thermodynamics of the Si—C—O System for the Production of Silicon Carbide and Metallic Silicon" and *Authors' Reply.* 471-477B
Correction to "Phase Relationships in the Fe-Cr-C System at Solidification Temperatures". 478B
A *Thermodynamic* Analysis and Calculation of the Fe—Ni—Cr Phase Diagram. 733-745A
A Thermodynamic Analysis of the Fe—Cr—N System. 1745-1752A
Phase Equilibria in the Al—Si—C System. 2005-2014A

Ternary systems, Solubility
Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 225-230B
The Coordination Cluster Theory: Extension to Multicomponent Systems. 1779-1783A

Testing equipment, Development
Use of a Mechanical Properties Microprobe in the Study of Weld Transformations. 1996-1999A

Texture
The Representation of Orientation Distributions. 1083-1092A
X-Ray Macrostress Determination on Textured Material; Use of the ODF for Calculating the X-Ray Compliances. 1229-1238A

Texture, Composition effects
Effect of Manganese on the Recrystallization Texture of Phosphorus-Containing Low-Carbon Steel Sheet. 957-968A

Thermal cycling
Internal Stress Superplasticity in Anisotropic Polycrystalline Zinc and Uranium. 451-462A

Thermal properties
See Heat of formation
Thermal stability

Thermal shock
Thermal Stress Fracture of Refractory Lining Components. I. Thermoelastic Analysis. 355-363B
Thermal Stress Fracture of Refractory Lining Components. II. Safe Heating and Cooling Rates. 365-370B

Thermal shock resistance
See Shock resistance

Thermal stability
Thermal Stress Fracture of Refractory Lining Components. III. Analysis of Fracture. 371-380B
Preparation of Amorphous Ni—Pd—P Particles by Melt Ejection Into Stirred Water and Their Hardness and Thermal Stability. 377-383A
Microstructural Characterization of a Rapidly Solidified Al—Mg—Mn Powder Alloy. 407-416A
Thermal Stability of the Nickel-Base Superalloy B-1900 + Hafnium With Tantalum Variations. 1341-1351A
Microstructural Observations and Thermal Stability of a Rapidly Solidified Aluminum—Gadolinium Alloy. 1533-1536A

Thermal stresses
Thermal Stress Fracture of Refractory Lining Components. I. Thermoelastic Analysis. 355-363B
Thermal Stress Fracture of Refractory Lining Components. II. Safe Heating and Cooling Rates. 365-370B
Thermal Stress Fracture of Refractory Lining Components. III. Analysis of Fracture. 371-380B

Thermocycling
See Thermal cycling

Thermodynamics
The Diffusion and Solubility of Oxygen in Solid Nickel. 43-50A
Carbonitride Precipitation in Niobium/Vanadium Microalloyed Steels. 211-222A
Phase Rule and Independent Components. 327-333A
Discussion of "Legendre Polynomial Expansions of Thermodynamic Properties of Binary Solutions" and Author's Reply. 354A
Stable and Metastable Phase Equilibria in the Al—Mn System. 385-392A
Activities in the System LiF—NaF—AlF_3. 409-414B
A Thermodynamic Analysis and Calculation of the Fe—Ni—Cr Phase Diagram. 733-745A

Analytical Expressions for the Activity of the Solute in Binary Dilute Solutions in Terms of Associated Solution Model Parameters. 1641-1644A
Thermodynamic Properties of Liquid Al—Mg Alloys Measured by the EMF Method. 1645-1651A
A Thermodynamic Analysis of the Fe—Cr—N System. 1745-1752A
An Experimental and Thermodynamic Study of the Fe—Cr—C—N System at 1273K. 1753-1768A
The Coordination Cluster Theory: Extension to Multicomponent Systems. 1779-1783A
Standard Enthalpies of Formation of PdZr and PdHf. 1989-1994A

Thermoelastic properties
See Snoek effect

Thermomechanical treatment
Austenitic Formation During Thermomechanical Treatment of Eutectoid Steel. 153-154A
Post-TMT Transformation Structure of Ferrite in Pearlite. 935-936A

Thermostability
See Thermal stability

Tin, Alloying elements
A Study of the Coarsening of Liquid—Solid Mixtures Using Synchrotron Radiation Microradiography. 487-490A
Dendritic Growth of Undercooled Nickel—Tin. II. 925-932A

Tin, Binary systems
Correction to "Effect of Small Additions of Silver on the Eutectic Temperature in the Lead-Tin System". 478B

Tin, Diffusion
Nonequilibrium Solute Segregation to Austenite Grain Boundaries in Low Alloy Ferritic and Austenitic Steels. 399-406A

Tin, Ternary systems
The Coordination Cluster Theory: Extension to Multicomponent Systems. 1779-1783A

Tin base alloys, Directional solidification
The Columnar to Equiaxed Transition in Tin—Lead Alloys. 425-432B

Titanium, Alloying additive
Effect of Titanium on the Nitrogen Solubility in Complex Liquid Fe—Cr—Ni Alloys. 231-235B
DO_3-B2-α Phase Relations in Fe—Al—Ti Alloys. 509-518A
Equilibrium Between Sulfur and Titanium in Liquid Iron. 681-685B

Titanium, Alloying elements
Hydrogen and Deuterium Diffusion in Vanadium—Titanium Alloys. 249-254A

Titanium, Binary systems
The Determination of the Titanium-Rich Liquidus and Solidus of the Ti—Fe System. 1679-1681A

Titanium, Extraction
Leaching Behavior of Ilmenite With Sulfuric Acid. 325-330B
Kinetics of Reduction of Ilmenite With Graphite at 1000 to 1100°C. 713-718B

Titanium, Mechanical properties
On the Influence of Strain-Path Changes on Fracture. 637-639A
The Influence of Grain Size on the Erosion Rate of Metals. 1043-1052A

Titanium, Welding
A Comprehensive Representation of Transient Weldpool Development in Spot Welding Operations. 1325-1332A

Titanium base alloys, Composite materials
A Computer Simulation of Strength of Metal Matrix Composites With a Reaction Layer at the Interface. 673-679A
Ti—6Al—4V—2Ni as a Matrix Material for a SiC-Reinforced Composite. 2151-2156A

Titanium base alloys, Crystal lattices
Microhardness and Lattice Parameter Calibrations of the Oxygen Solid Solutions of Unalloyed α-Titanium and Ti—6Al—2Sn—4Zr—2Mo. 1503-1510A

Titanium base alloys, Heat treatment
The Influence of Heat Treatment on the Structure and Properties of a Near-α Titanium Alloy. 877-891A

Titanium base alloys, Mechanical properties
Correlation of Tensile Properties, Deformation Modes, and Phase Stability in Commercial β-Phase Titanium Alloys. 265-271A
A Model for High Temperature Ductility Losses in α—β Titanium Alloys. 483-485A
Effect of Hydrogen on Creep Behavior of Ti—6Al—4V Alloy at Room Temperature. 1125-1130A
The Effect of Hydrogen on Mechanical Properties in Ti—10V—2Fe—3Al. 1421-1430A
Microstructure, Creep, and Tensile Deformation in Ti—6Al—2Nb—1Ta—0.8Mo. 1451-1468A
Processing Properties Relationships of Ti—10V—2Fe—3Al. 2095-2103A

Titanium base alloys, Phase transformations
Phase Transformations in Ti_2Ni_3 Precipitates Formed in Aged Ti—52 at.% Ni. 785-799A

Titanium base alloys, Phases (state of matter)
Silicide Formation in Ti—3Al—8V—6Cr—4Zr—4Mo. 2015-2025A

Titanium base alloys, Powder technology
Attempted Preparation of Ti-6-4 Alloy Powders From $TiCl_4$, Aluminum, VCl_4, and Sodium. 511-517B

Titanium ores
See Ilmenite

Tool steels
See High speed tool steels

Tools
See High speed tool steels

Topography
In Situ Observation of Solidification of Silicon Steel by Synchrotron Radiation X-Ray Topography. 723-727A

Torsion tests
A Study of the Hot-Working Behavior of SiC—Al Alloy Composites and Their Matrix Alloys by Hot Torsion Testing. 303-312A

Toughness
See Fracture toughness
Notch toughness

Transferring
See Heat transfer
Mass transfer

Transformations (materials)
See Allotropic transformation
Martensitic transformations
Phase transformations

Transition metal alloys
See Copper base alloys
Ferrous alloys
Molybdenum base alloys
Nickel base alloys
Niobium base alloys
Silver base alloys
Titanium base alloys
Tungsten base alloys
Vanadium base alloys
Zirconium base alloys

Transition metal compounds
See Copper compounds
Hafnium compounds
Iron compounds
Iron oxides
Nickel compounds
Palladium compounds
Silver compounds
Tungsten carbide
Zinc compounds
Zirconium compounds

Transition metals
See Chromium
Cobalt
Copper
Gold
Hafnium
Iron
Manganese
Mercury (metal)
Molybdenum
Nickel
Palladium
Silver
Tantalum
Titanium
Tungsten
Vanadium
Zinc
Zirconium

Transition temperature (superconductivity), Microstructural effects
Electrical Properties of Al—In—Sn Alloys Directionally Solidified in High and Low Gravitational Fields. 1511-1517A

Transmission electron microscopy
Nonequilibrium Solute Segregation to Austenite Grain Boundaries in Low Alloy Ferritic and Austenitic Steels. 399-406A

Traps
Internal Friction Study of Substitutional—Interstitial Interaction in Niobium—Vanadium Alloys. 1415-1420A
Evaluation of Hydrogen-Trap Binding Enthalpy. I. 1559-1564A

TTT curves
The Aging Behavior of Homogenized Type 308 and 308CRE Stainless Steel. 1195-1201A

Tubes, Mechanical properties
Crystal Slip Modeling of Small Strain Yield Behavior in Textured Copper Tubing. 255-264A

Tubular goods
See Tubes

Tungsten, Extraction
Kinetics of the Dissolution of Scheelite in Aqueous Na_4EDTA Solutions. 331-337B

Tungsten, Reactions (chemical)
A Diffusion Model for Tungsten Powder Carburization. 969-974A

Tungsten, Ternary systems
A Thermodynamic Evaluation of the C—Fe—W System. 175-188A

Tungsten base alloys, Microstructure
The Two-Dimensional Connectivity of Liquid Phase Sintered Microstructures. 909-914A

Tungsten carbide, Microstructure
A Study of Microstructures of Tungsten Carbide Powder. 753-758A

Tungsten carbide, Synthesis
A Diffusion Model for Tungsten Powder Carburization. 969-974A

Tungsten compounds
See Tungsten carbide

Tungsten ores, Reduction (chemical)
Kinetics of the Dissolution of Scheelite in Aqueous Na_4EDTA Solutions. 331-337B

Turbine blades, Coating
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. I. Diffusion Paths and Microstructures. 2061-2073A
Interdiffusion in Nickel-Rich, Ni—Cr—Al Alloys at 1100 and 1200°C. II. Diffusion Coefficients and Predicted Concentration Profiles. 2075-2086A
Predicting Diffusion Paths and Interface Motion in $\gamma/\gamma + \beta$, Ni—Cr—Al Diffusion Couples. 2087-2094A

Turbines
See Gas turbines

Turbulent flow
The Effect of Tundish Wall Inclination on the Fluid Flow and Mixing: a Modeling Study. 81-92B
Measurement of Physical Characteristics of Bubbles in Gas—Liquid Plumes. I. An Improved Electroresistivity Probe Technique. 649-658B

Twinning
Correlation of Tensile Properties, Deformation Modes, and Phase Stability in Commercial β-Phase Titanium Alloys. 265-271A
The Mechanism of Silicon Modification in Aluminum—Silicon Alloys: Impurity Induced Twinning. 1721-1733A

Ultimate tensile strength
See Tensile strength

Ultrasonic attenuation
Velocity and Absorption Coefficient of Ultrasonic Waves in Molten and Glassy Silicates and Borates. 549-555B

Ultrasonic testing
Ultrasonic Characterization of Surface Modified Layers. 473-480A
Velocity and Absorption Coefficient of Ultrasonic Waves in Molten and Glassy Silicates and Borates. 549-555B

Undercooling
See Supercooling

UP hardfacing method
See Hard surfacing

Uranium, Extraction
The Measurement of the Diffusion Coefficient of Uranium(VI) in Aqueous Uranyl Sulfate Solutions. 19-23B
Calculation of Equilibrium Species for the Aqueous Solution Systems of UO_2SO_4—$U(SO_4)_2$—H_2SO_4—HF and UO_2Cl_2—UCl_4—HCl—HF at 298K. 49-57B

Uranium, Mechanical properties
Internal Stress Superplasticity in Anisotropic Polycrystalline Zinc and Uranium. 451-462A

Vanadium, Alloying additive
Austenite Recrystallization in Nb/V Microalloyed Steels. 481-483A

Vanadium, Alloying elements
Internal Friction Study of Substitutional—Interstitial Interaction in Niobium—Vanadium Alloys. 1415-1420A

Vanadium base alloys, Diffusion
Hydrogen and Deuterium Diffusion in Vanadium—Titanium Alloys. 249-254A

Vanadium base alloys, Mechanical properties
Effects of Hydrogen on Low Temperature Hardening and Embrittlement of V—Cr Alloys. 1593-1601A

Vapor deposited coatings
CVD Chromized Nickel. 617-619B

Vapor deposition
CVD Chromized Nickel. 617-619B

Vaporizing
See also Coal gasification
Mechanism of Alloying Element Vaporization During Laser Welding. 733-740B

Vapors
See Water vapor

Vessels
See Pressure vessels

Vickers hardness
See Diamond pyramid hardness

Viscoplasticity
Theory of Plastic and Viscous Deformation. 811-826A

Viscosity
Viscosities of Aluminum-Rich Al—Cu Liquid Alloys. 421-424B

Voids
Void/Pore Distributions and Ductile Fracture. 1887-1895A

Volatilizing
See Vaporizing

Washing
See Gas scrubbing

Water vapor, Environment
The High Temperature Oxidation of Al—4.2Mg Alloy. 463-472A

Wear
See Erosion-corrosion
Impingement erosion

Wear resistance
Microstructure and Wear Properties of Laser Clad Fe—Cr—Mn—C Alloys. 313-322A

Wear resistance, Alloying effects
The Effect of Aluminum on the Work Hardening and Wear Resistance of Hadfield Manganese Steel. 1629-1639A

Wear resistance, Microstructural effects
Structure and Properties of Corrosion and Wear Resistant Cr—Mn—N Steels. 847-855A

Weld metal
A Comprehensive Representation of Transient Weldpool Development in Spot Welding Operations. 1325-1332A

Weld metal, Phase transformations
Use of a Mechanical Properties Microprobe in the Study of Weld Transformations. 1996-1999A

Weld metal, Structural hardening
The Aging Behavior of Homogenized Type 308 and 308CRE Stainless Steel. 1195-1201A

Welded joints, Corrosion
Hydrogen Attack Behavior of the Heat Affected Zone of a 2.25Cr—1Mo Steel Weldment. 1309-1312A

Welded joints, Mechanical properties
Structure—Property Correlation of Submerged-Arc and Gas-Metal-Arc Weldments in HY-100 Steel. 987-999A

Welded joints, Phase transformations
Use of a Mechanical Properties Microprobe in the Study of Weld Transformations. 1996-1999A

Welding
See Gas metal arc weldin
Laser beam welding
Plasma arc welding
Spot welding
Submerged arc welding

Welds
See Welded joints

Wettability
Capillary Forces Between Spheres During Agglomeration and Liquid Phase Sintering. 11-17A

White iron, Mechanical properties
Microstructures and Superplastic Behavior of Eutectic Fe—C and Ni—Cr White Cast Irons Produced by Rapid Solidification. 1703-1711A

Widmanstatten structure
Ferrite and Carbide Morphologies In and Below the "Bay Region" of an Fe—0.19% C—2.30% Mo Alloy. 2047-2060A

Wire, Mechanical properties
Preparation, Mechanical Strengths, and Thermal Stability of Ni—Si—B and Ni—P—B Amorphous Wires. 621-628A

Wolfram
See Tungsten

Work hardening
See Strain hardening

Work softening
See Strain softening

Work strengthening
See Strain hardening

Workability
See also Formability
Hot workability
A Simplified Model of Heat Generation During the Uniaxial Tensile Test. 1001-1009A
A Study of the Hot Working Behavior of Al—Mg Alloy 5052 by Hot Torsion Testing. 1603-1611A

Yield strain
See Strain

Yield strength
Yielding and Deformation Behavior of the Single Crystal Superalloy PWA 1480. 85-95A
Crystal Slip Modeling of Small Strain Yield Behavior in Textured Copper Tubing. 255-264A
Some Remarks on the Hardness and Yield Strength of Aluminum Alloy 7075 as a Function of Retrogression Time. 350-353A

Yield strength, Alloying effects
Microstructures and Mechanical Properties of Ni_3Al Alloyed With Iron Additions. 1265-1277A

Yield strength, Deformation effects
Elastic—Plastic Analysis of Hardened Layers in Rims Subjected to Repeated Rolling Contacts. 827-833A

Yield strength, Impurity effects
The Effect of Low Melting Point Impurities on the Properties of Aluminum—Lithium Alloys. 2181-2193A

Yield strength, Microstructural effects
The Role of Boron in Ductilizing Ni_3Al. 425-428A
Microstructural Effects and Crack Closure During Near Threshold Fatigue Crack Propagation in a High Strength Steel. 865-876A
Granular Product in a High Strength, Low Alloy Containing Molybdenum and Niobium. 1923-1927A

Yield stress
See Yield strength

Zeolites
See Ion exchange resins

Zinc, Binary systems
The Liquid Immiscibility and Associated Monotectic Reaction in Zn—In System. 1131-1136A

Zinc, Extraction
Electrical Conductivity of Acidic Sulfate Solution. 41-47B

Leaching Studies of Chalcopyrite and Sphalerite With Hypochlorous Acid. 315-323B
Intrinsic Kinetics of the Reaction Between Zinc Sulfide and Water Vapor. 451-457B
Kinetics of Zinc Oxide Formation From Zinc Sulfide by Reaction With Lime in the Presence of Water Vapor. 727-732B
Discussion of "Electrical Conductivity of Acidic Sulfate Solution" and Author's Reply. 741-748B

Zinc, Mechanical properties
Internal Stress Superplasticity in Anisotropic Polycrystalline Zinc and Uranium. 451-462A

Zinc, Ternary systems
A Practical Solution for the Diffusion Equations in Binary and Multicomponent Systems With Constant Intrinsic Diffusion Coefficients. 801-809A
Predicting the Occurrence of Zero Flux Planes. 1565-1568A

Zinc compounds, Oxidation
Kinetics of Zinc Oxide Formation From Zinc Sulfide by Reaction With Lime in the Presence of Water Vapor. 727-732B

Zinc ores
See Sphalerite

Zirconium, Alloying elements
Zirconium vs. Manganese—Chromium for Grain Structure Control in an Al—Cu—Li Alloy. 1820-1823A

Zirconium, Binary systems
Phase Transformations in the Zirconium-Rich Part of the Zr—Fe System Resulting From Heat Treatment and Plastic Deformation. 27-33A

Zirconium base alloys, Mechanical properties
Effect of Heat Treatment on Delayed Hydride Cracking in Zr—2.5 wt.% Nb. 1687-1694A

Zirconium compounds, Thermal properties
Standard Enthalpies of Formation of PdZr and PdHf. 1989-1994A

Zone melting
The Growth of Single Crystal Terfenol-D Crystals. 223-231A

Zone refining
See Zone melting